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THE NEW
NATIONAL CYCLOPÆDIA

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THE NEW
NATIONAL CYCLOPÆDIA
AND TREASURY OF KNOWLEDGE.

A HANDY BOOK OF READY REFERENCE FOR SCHOOLS.

THE ARTICLES RELATING TO AMERICA EDITED BY
AINSWORTH R. SPOFFORD, LATE LIBRARIAN OF CONGRESS,
AND EDITOR OF THE "LIBRARY OF CHOICE LITERATURE."

THE ARTICLES RELATING TO EUROPE EDITED BY
CHARLES ANNANDALE, M.A., LL.D.,
EDITOR OF THE "IMPERIAL DICTIONARY," ETC.

—THE WORK COMPRISES—

A CYCLOPÆDIA OF GENERAL KNOWLEDGE.

A DICTIONARY OF HISTORICAL EVENTS.

A COMPLETE ATLAS OF AUTHORIZED MAPS.

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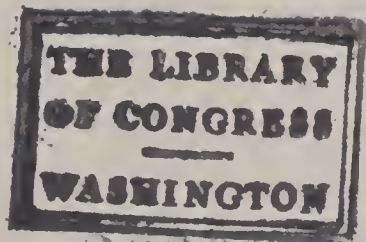
VOL. I.

TOLEDO, OHIO :
THE BROWN, EAGER AND HULL CO.

1899.

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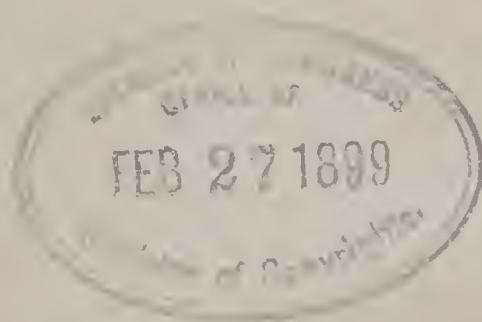
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PUBLISHERS' PREFACE.

THE NEW NATIONAL CYCLOPÆDIA occupies a place *unique* among works of its kind by supplying, what has long been wanted, a means of getting rapidly at central and vital facts, carefully sifted from unessential details, in all departments of knowledge. It is thus well adapted for the use of busy people, and especially for teachers and students.

It is convenient to consult, with volumes so easily handled, and limited in number, that the whole work may be kept, if desired, lying within reach upon desk or table.

A glance at the colored maps will indicate the key-note of our intent. They are small, neat, concise and THOROUGH—indeed, all that is necessary for satisfactory reference—and so it is through all the range of the compilation of Universal Knowledge included in this work, and the fact that it is edited by two of the most correct and painstaking Cyclopædia authorities in Europe and America is a guarantee of its standard excellence.

The statistics of Populations, Imports and Exports, Manufactures, Railways, Important Industries, Finance and Public Debts of all the Nations of both Hemispheres have been carefully compared with the latest official state papers

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KEY TO THE PRONUNCIATION.

The pronunciation of the words that form the titles of the articles is indicated in two ways: 1st, By *re-writing* the word in a different form and according to a simple system of transliteration. 2d, By marking the syllable on which the chief *accent* falls. Entries which simply have their accentuation marked are English or foreign words that present little difficulty, and in regard to which readers can hardly go far wrong. A great many of the entries, however, cannot be treated in this way, but must have their pronunciation represented by a uniform series of symbols, so that it shall be unmistakable. In doing this the same letter or combination of letters is made use of to represent the same *sound*, no matter by what letter or letters the sound may be represented in the word whose pronunciation is shown. The key to the pronunciation by this means is greatly simplified, the reader having only to remember one character for each sound. Sounds and letters, it may be remarked, are often very different things. In the English language there are over forty sounds, while in the English alphabet there are only twenty-six letters to represent them. Our alphabet is, therefore, very far from being adequate to the duties required of it, and still more inadequate to represent the various sounds of foreign languages.

The most typical *vowel* sounds (including diphthongs) are as shown in the following list, which gives also the characters that are used in the Cyclopaedia to show their pronunciation, most of these being distinguished by diacritical marks.

ā, as in <i>fatc</i> , or in <i>bare</i> .	<i>eu</i> , a long sound as in Fr. <i>jeûne</i> , = Ger. long
ä, as in <i>alms</i> , Fr. <i>âme</i> , Ger. <i>Bahn</i> = á of Indian names.	ö, as in <i>Söhne</i> , <i>Göthe</i> (Goethe).
â, the same sound short or medium, as in Fr. <i>bal</i> , Ger. <i>Mann</i> .	<i>cu</i> , corresponding sound short or medium, as in Fr. <i>peu</i> = Ger. <i>ö</i> short.
a, as in <i>fat</i> .	ō, as in <i>note</i> , <i>moan</i> .
â, as in <i>fall</i> .	o, as in <i>not</i> , soft—that is. short or medium.
ɑ, obscure, as in <i>rural</i> , similar to <i>u</i> in <i>but</i> , é in <i>her</i> : common in Indian names.	ö, as in <i>move</i> , <i>two</i> .
ē, as in <i>me</i> = <i>i</i> in <i>machine</i> .	ū, as in <i>tube</i> .
e, as in <i>met</i> .	u, as in <i>tub</i> : similar to é and also to <i>a</i> .
ê, as in <i>her</i> .	ȳ, as in <i>bull</i> .
ī, as in <i>pine</i> , or as <i>ei</i> in Ger. <i>mein</i> .	ü, as in Sc. <i>abune</i> = Fr. <i>û</i> as in <i>dû</i> , Ger. <i>ü</i> long as in <i>grün</i> , <i>Bühne</i> .
i, as in <i>pin</i> , also used for the short sound corresponding to ē, as in French and Italian words.	û, the corresponding short or medium sound, as in Fr. <i>but</i> , Ger. <i>Müller</i> .
	oi, as in <i>oil</i> .
	ou, as in <i>pound</i> ; or as <i>au</i> in Ger. <i>Haus</i> .

Of the *consonants*, b, d, f, h, j, k, l, m, n, ng, p, sh, t, v, z, always have their common English sounds, when used to transliterate foreign words. The letter c is not used by itself in re-writing for pronunciation, s or k being respectively used instead. The only consonantal symbols, therefore, that require explanation are the following:—

ch is always as in <i>rich</i> .	s, always as in <i>so</i> .
d, nearly as <i>th</i> in <i>this</i> = Sp. <i>d</i> in <i>Madrid</i> , &c.	th, as <i>th</i> in <i>thin</i> .
g is always hard, as in <i>go</i> .	th, as <i>th</i> in <i>this</i> .
h represents the guttural in Scotch <i>loch</i> , Ger. <i>nach</i> , also other similar gutturals.	w always consonantal, as in <i>we</i> .
n, Fr. nasal <i>n</i> as in <i>bon</i> .	x = ks, which are used instead.
r represents both English <i>r</i> , and <i>r</i> in foreign words, which is generally much more strongly trilled.	y always consonantal, as in <i>yca</i> (Fr. <i>ligne</i> would be re-written <i>lēny</i>).
	zh, as <i>s</i> in <i>pleasurc</i> = Fr. <i>j</i> .

THE NEW CABINET CYCLOPÆDIA.

VOL. I.

A, the first letter in almost all alphabets. Most modern languages, as French, Italian, German, have only one sound for *a*, namely, the sound which is heard in *father* pronounced short or long; in English this letter is made to represent seven sounds, as in the words *father*, *mat*, *mate*, *mare*, *many*, *ball*, *what*, besides being used in such digraphs as *ea* in *heat*, *oa* in *boat*.—**A**, in music, is the sixth note in the diatonic scale of C, and stands when in perfect tune to the latter note in the ratio of $\frac{3}{2}$ to 1. The second string of the violin is tuned to this note.

A 1, a symbol attached to vessels of the highest class in Lloyd's register of shipping, **A** referring to the hull of the vessel, while 1 intimates the sufficiency of the rigging and whole equipment. Iron vessels are classed **A 1** with a numeral prefixed, as 100 **A 1**, 90 **A 1**, the numeral denoting that they are built respectively according to certain specifications.

Aa (ä) (from Old German *aha*; allied to Latin *aqua*, water), the name of a great many streams of central and northern Europe.

Aachen (ä'hén). See *Aix-la-Chapelle*.

Aalborg (öl'borh; 'eel-town'), a seaport of Denmark. Pop. 1890, 19,503.

Aali Pasha, grand vizier of Turkey, was born in 1815; died in 1871. He served as grand vizier or prime minister four terms, and was prominent as a diplomatist and successful as minister of foreign affairs. He was firm but moderate in his administration of office. Died September 6, 1871.

Aar (är), the name of several European rivers, of which the chief (160 miles long) is a tributary of the Rhine, next to it and the Rhone the longest river in Switzerland. It has its origin from the upper and lower glaciers of the Aar in the Bernese Alps. On it are Interlaken, Thun, Bern, Solothurn, and Aarau, to which, as to the canton of Aargau, it gives its name.

Aarau (ä'rou), a well-built and finely

situated town in Switzerland, capital of canton Aargau, on the river Aar. Pop. 5914.

Aard-vark (ärd'vârk : earth-pig), a burrowing insectivorous animal of South Africa, *Orycteropus capensis*, order Edentata, having



Aard-vark (*Orycteropus capensis*).

affinities with the ant-eaters and armadillos. Called also *ground-hog* and *Cape pig*.

Aardwolf (ärd'wulf; earth-wolf) (*Proteles cristatus*), a carnivorous burrowing animal of South Africa, allied to the hyenas and civets. Feeds on carrion, small mammals, insects, &c.

Aargau (är'gou), or **ARGOVIE** (är-go-vē), a northern canton of Switzerland; area, 543 square miles; hilly, well wooded, abundantly watered by the Aar and its tributaries, and well cultivated. It formed part of the canton Bern till 1798. Pop. 190,266, of whom more than half are Protestants. German is almost universally spoken. Capital, Aarau.

Aarhus (ör'hös), a seaport and ancient town of Denmark, on the east coast of Jutland; has a fine Gothic cathedral, a good harbour, considerable trade and manufactures of woollens, gloves, hats, tobacco, &c. Pop. 1890, 33,308.

Aaron (ā'ron), of the tribe of Levi, eldest son of Amram and Jochebed, and brother and assistant of Moses. At Sinai, when the people became impatient at the long-continued absence of Moses, he complied with their request in making a golden calf, and

thus became involved with them in the guilt of gross idolatry. The office of high-priest, which he first filled, was made hereditary in his family. He died at Mount Hor at the age of 123, and was succeeded by his son Eleazar.

Aaron's Beard. See *Saint John's Wort* and *Toad-flax*.

Aaron's Rod. See *Golden-rod* and *Mullein*.

Aasvār (ōs'vār), a group of small islands off the Norwegian coast, under the Arctic Circle, where there is an important December herring-fishery.

Ab, the eleventh month of the Jewish civil, the fifth of the ecclesiastical, year—part of July and part of August.

Ababdeh (ab-ab'de), a nomadic African race inhabiting Upper Egypt and part of Nubia, between the Nile and the Red Sea, of Hamitic stock, and thus akin in race to the ancient Egyptians; dark brown in colour; Mohammedans in religion.

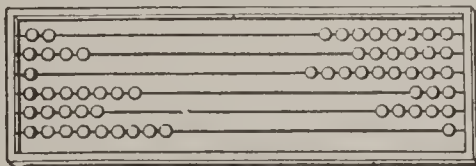


An Ababdeh Man.

Ab'aca, or **MANILLA HEMP**, a strong fibre yielded by the leaf-stalks of a kind of plantain (*Musa textilis*) which grows in the Indian Archipelago, and is cultivated in the Philippines. The outer fibres of the leaf-stalks are made into strong and durable ropes, the inner into various fine fabrics.

Ab'aco **GREAT** and **LITTLE**, two islands of the Bahamas group.

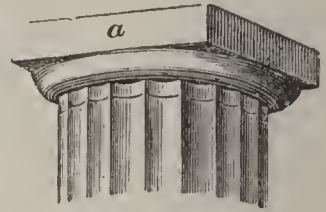
Ab'acus, a Latin term applied to an apparatus used in elementary schools for facilitating arithmetical operations, consisting of a number of parallel cords or wires, upon which balls or beads are strung, the upper-



Abacus for Calculations.

tating arithmetical operations, consisting of a number of parallel cords or wires, upon which balls or beads are strung, the upper-

most wire being appropriated to units, the next to tens, &c.—In classic architecture it denotes the tablet forming the upper member of a column, and supporting the entablature. In Gothic architecture the upper member of a column from which the arch springs.



Doric Capital—*a*, the Abacus.

Abad'don (Heb. destruction), the name given in Rev. ix. 11 as that of the angel of the bottomless pit, otherwise called *Apol-lion*.

Abakansk', a fortified place in Siberia, near the Upper Yenisei, founded by Peter the Great in 1707.

Abalone (ab-a-lō'ne), a name in California for a species of ear-shell (*Haliotis*) that furnishes mother-of-pearl.

Ab'ana, a river near Damascus.

Aban'donment, a term of marine insurance, employed to designate the case where the party insured gives up his whole interest in the property to the insurer, and claims as for a total loss.

Ab'ano, a village of North Italy, 5 miles from Padua, famous for its mud-baths and warm springs. It claims to be the birth-place of Livy. Pop. 711.

Ab'ano, **PIETRO D'**, a celebrated Italian physician, philosopher, and astrologer, born at Abano in 1250, died at Padua in 1316. He studied at Padua, went to Constantinople to learn Greek, visited Paris and studied mathematics and medicine, and travelled in England and Scotland. He became professor of medicine at Padua, and wrote on this subject and on philosophy.

Aba'rim, mountain range of Eastern Palestine, including Nebo, whence Moses is said to have viewed the Promised Land.

Abatement, in law, has various significations. *Abatement of nuisances* is the remedy allowed to a person injured by a public or private nuisance, of destroying or removing it himself. A *plea in abatement* is brought forward by a defendant when he wishes to defeat or quash a particular action on some formal or technical ground. Abatement, in mercantile law, is an allowance, deduction, or discount made for prompt payment or other reason.

Ab'attis, **ABATIS**, in military affairs, a mass of trees cut down and laid with their branches turned towards the enemy in such

a way as to form a defence for troops stationed behind them.

Abattoir (ab-at-wär'), a French term for a slaughter-house, now anglicized since the establishment of the celebrated abattoirs of Paris, instituted by Napoleon in 1807, and brought to completion in 1818. Such public slaughter-houses, provided with every sort of convenience, kept admirably clean, and with a plentiful supply of water, are now to be found in many large towns.

Abauzit, **FIRMIN** (â-bō-zē), a French Protestant scholar, born in 1679, died 1767. He lived chiefly at Geneva, but visited England and was highly esteemed by Newton, who considered him not unfit to be judge between himself and Leibnitz in the quarrel as to the invention of the integral and differential calculus. He left few writings.

Abba, a Semitic word equivalent to 'Father,' which, being applied in the Eastern church to monks, superiors of monks, and other ecclesiastics, gave rise to the word *abbot*. In the Syriac and Coptic Churches it is given to the bishops.

Abbadie (âb-â-dē), **ANTOINE THOMSON** and **ARNAUD MICHEL D'**, French travellers, born in Dublin in 1810 and 1815 respectively. They spent a number of years in Abyssinia, and have published works throwing much light on that country; by Arnaud, *Douze ans dans la Haute-Ethiopie*; by Antoine, *Géodésie d'Ethiopie*, &c.

Abbas I., the *Great*, shah or king of Persia, born in 1557, obtained the throne in 1586, at a time when the Turks and hordes of Usbek Tartars had made great encroachments on the country. Having defeated the Usbeks, recovered the provinces overrun by them, and reduced great part of Afghanistan, he made war against the Turks, and in 1605 defeated them near Bussorah, thus getting back all the lost provinces. He thus extended his rule beyond Persia proper, and at his death in 1628 his dominions stretched from the Tigris to the Indus. He is looked upon by the Persians as their greatest sovereign.

Abbas Mirza, a Persian prince and soldier, son of the shah Feth Ali, born 1783, died 1833; greatly distinguished himself in the wars against Russia.

Abbassides (ab'as-sidz), the name of an Arabian dynasty which supplanted the Omniades. It traced its descent from Abbas (born 566, died 652), uncle of Mohammed, and furnished thirty-seven caliphs to Bagdad between 749 and 1258. Harun al Ra-

shid was a member of this dynasty. See *Caliphs*.

Abbate (âb-bä'tā), the Italian term corresponding to *Abbé*.

Abbé (âb-ā), the French word for abbot, was, before the French revolution, the common title of all who had studied theology either with a view to become ordained clergymen, or merely in the hope of obtaining some appointment or benefice, to which such study was considered a preliminary requisite. Many of them had little that was clerical in their manners or character. Marked out by their special dress, they were seen everywhere—at the court, the ball, the theatre, and other places of public resort, and in private families, where they acted sometimes as tutors and sometimes as confidential advisers. Others again adopted the literary profession or became teachers in the higher educational establishments.

Abbeoku'ta, a town of West Africa, in the Egba country, on the Ogun river, 80 miles N.N.W. of Lagos, composed of scattered and filthy lines of houses built of mud, and surrounded by a mud wall 17 or 18 miles in circuit. Pop. 100,000 to 150,000.

Ab'bess. See *Abbey* and *Abbot*.

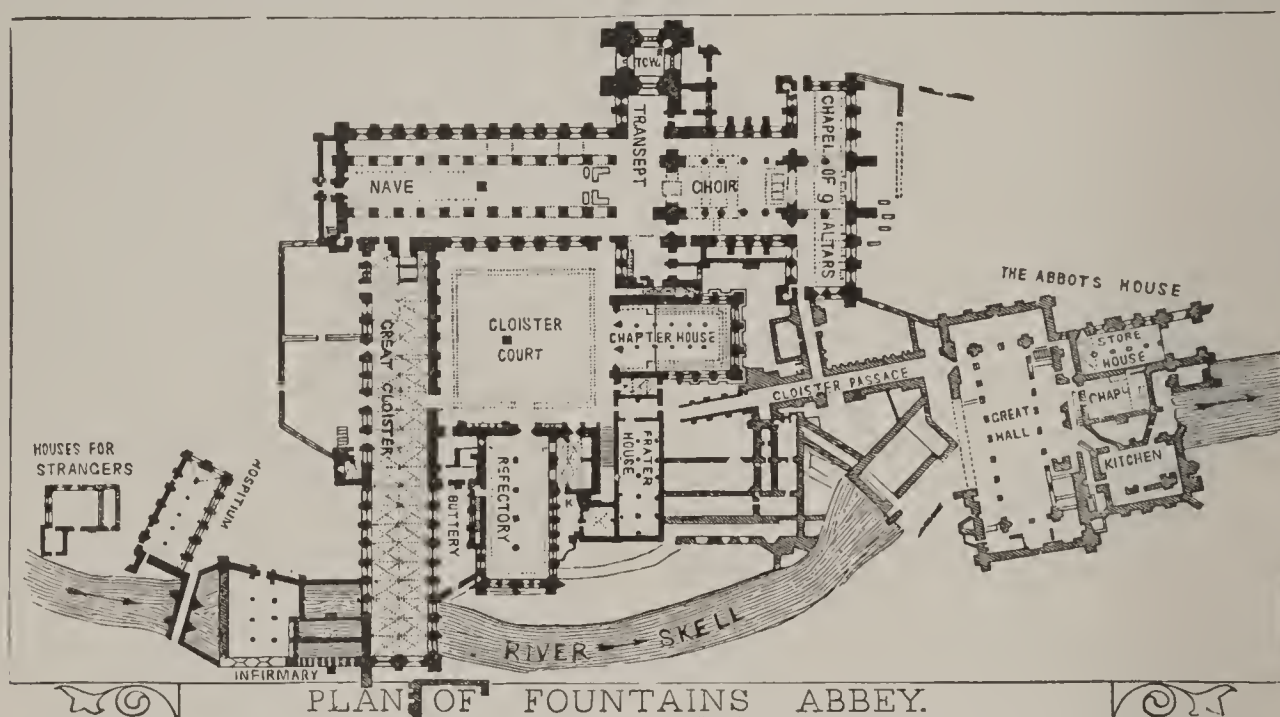
Abbeville (âb-vēl) a town of France, dep. Somme, on the river Somme (which is here tidal), 108 miles N.N.W. of Paris. It has a Gothic church (St. Vulfran) with magnificent west front in the Flamboyant style; manufactures of woollens, sail-cloth, chemicals, &c., and considerable trade. Pop. 18,208.

Ab'bey, a monastery or religious community of the highest class, governed by an *abbot*, assisted generally by a prior, sub-prior, and other subordinate functionaries; or, in the case of a female community, superintended by an *abbess*. An abbey invariably included a church. A priory differed from an abbey only in being scarcely so extensive an establishment, and was governed by a *prior*. In the English conventual cathedral establishments, as Canterbury, Norwich, Ely, &c., the archbishops or bishops held the abbot's place, the immediate governor of the monastery being called a prior. Some priories sprang originally from the more important abbeys, and remained under the jurisdiction of the abbots; but subsequently any real distinction between abbeys and priories was lost. The greater abbeys formed most complete and extensive establishments, including not only the church and other buildings devoted to the monastic life and

ABBIATEGRASSO — ABBOT.

its daily requirements, such as the refectory or eating-room, the dormitories or sleeping-rooms, the room for social intercourse, the school for novices, the scribes' cells, library, and so on; but also workshops, storehouses, mills, cattle and poultry sheds, dwellings for

artisans, labourers, and other servants, infirmary, guest-house, &c. Among the most famous abbeys on the continent of Europe were those of Cluny, Clairvaux, and Cîteaux in France; St. Galle in Switzerland, and Fulda in Germany; the most noteworthy



English abbeys were those of Westminster, St. Mary's of York, Fountains, Kirkstall, Tintern, Rievaulx, Netley; and of Scotland, Melrose, Paisley, and Arbroath. See *Abbot, Monastery*.

Abbategrasso (äb-bē-ä'tā-gräs-sō), a town in the north of Italy, 15 miles w.s.w. of Milan. Pop. 5425.

Ab'bot (ultimately from Syriac *abba*, father), the head of an abbey (see *Abbey*), the lady of similar rank being called *abbess*. An abbess, however, was not, like the abbot, allowed to exercise the spiritual functions of the priesthood, such as preaching, confessing, &c.; nor did abbesses ever succeed in freeing themselves from the control of their diocesan bishop. In the early age of monastic institutions (say 300-600 A.D.) the monks were not priests, but simply laymen who retired from the world to live in common, and the abbot was also a layman. In the course of time the abbots were usually ordained, and when an abbey was directly attached to a cathedral the bishop was also abbot. At first the abbeys were more remarkable for their numbers than for their magnitude, but latterly many of them were large and richly endowed, and the heads of such establishments became personages of

no small influence and power, more especially after the abbots succeeded (by the eleventh century) in freeing themselves from the jurisdiction of the bishop of their diocese. Hence families of the highest rank might be seen eagerly striving to obtain the titles of abbot and abbess for their members. The great object was to obtain control over the revenues of the abbeys, and for this purpose recourse was had to the device of holding them under a kind of trust, or, as it was called, *in commendam*. According to the original idea the abbot *in commendam*, or 'commendator,' was merely a temporary trustee, who drew the whole or part of the revenues during a vacancy, and was bound to apply them to specific purposes; but ultimately the commendator or lay abbot in many instances held the appointment for life, and was allowed to apply the whole or a large portion of the revenues to his own private use. Many of the abbots latterly vied with the bishops and nobility in rank and dignity, wearing a mitre and keeping up a great style. In England twenty-seven abbots long sat in the House of Lords. The Reformation introduced vast changes, not only in Protestant countries, where abbeys and all other monastic establish-

ABBOT — ABBREVIATIONS.

ments were generally suppressed, but even in countries which still continued Roman Catholic; many sovereigns, while displaying their zeal for the R. Catholic Church by persecuting its opponents, not scrupling to imitate them in the confiscation of church property.

Abbot of Misrule, the personage who took the chief part in the Christmas revelries of the English populace before the Reformation.

Abbot, GEORGE, Archbishop of Canterbury, born 1552, died 1633; studied at Oxford, assisted in the translation of the Bible, was made Bishop of Lichfield in 1609, next year Bishop of London, and in 1611 Archbishop of Canterbury. He retained the favour of James I. to the last, but after the accession of Charles I. his influence at court was superseded by that of Laud. He published several works, chiefly theological.

Ab'botsford, the country-seat of Sir Walter Scott, on the south bank of the Tweed, in Roxburghshire, 3 miles from Melrose, in the midst of picturesque scenery, forming an extensive and irregular pile in the Scottish baronial style of architecture.—*Abbotsford Club*, a club established at Edinburgh for printing works throwing light on matters of history or literature connected with the writings of Sir W. Scott; issued 34 vols. 1835–1864.

Ab'bott, JACOB, a popular and prolific American writer, especially of entertaining and instructive books for the young; born 1803, died 1879; was teacher and subsequently clergyman.—His brother, **JOHN STEPHENS CABOT** (b. 1805, d. 1877), Congregational clergyman, has written a number of books, chiefly historical.—**LYMAN**, son of Jacob Abbott, b. 1835, Congregational clergyman, has written works chiefly religious in character, such as *Jesus of Nazareth*, *His Life and Teachings*; *Popular Religious Dictionary*, &c.

Abbrevia'tions, devices used in writing and printing to save time and space, consisting usually of curtailments effected in words and syllables by the removal of some letters, often of the whole of the letters except the first. The following is a list of the more important:—

@, *ad*, *at*.

A.B., *artium baccalaureus*, bachelor of arts; able seaman.

Abp., archbishop.

A.C., *ante Christum*, before Christ.

Ac., acre.

Acc., A/c, or Acct., account.

A.D., *anno Domini*, in the year of our Lord: used

also as if equivalent to 'after Christ,' or 'of the Christian era.'

A.D.C., aide-de-camp.

Æt. or Ætat., *ætatis* (*anno*), in the year of his age.

A.H., *anno Hejræ*, in the year of the Hegira.

A.M., *ante meridiem*, forenoon; *anno mundi*, in the year of the world; *artium magister*, master of arts.

Anon., anonymous.

A.R.A., associate of Royal Academy (London).

A.R.S.A., associate of the Royal Scottish Academy.

A.U.C., *ab urbe condita*, from the building of Rome (753 B.C.)

A.V., authorized version.

B.A., bachelor of arts.

Bart. or Bt., baronet.

B.C., before Christ.

B.C.L., bachelor of civil law.

B.D., bachelor of divinity.

B.L., bachelor of laws.

B.M., bachelor of medicine.

Bp., bishop.

B.S., bachelor of surgery.

B.Sc., bachelor of science.

B.V., blessed Virgin.

C., cap., or chap., chapter.

C.A., chartered accountant.

Cantab., *Cantabrigiensis*, of Cambridge.

Cantuar., *Cantuariensis*, of Canterbury.

C.B., companion of the Bath.

C.D.V., *carte de visite*.

C.E., civil engineer.

Cf., *confer*, compare.

C.I., order of the Crown of India.

C.I.E., companion of the Indian Empire.

C.J., chief-justice.

C.M., *chirurgiæ magister*, master in surgery; common metre.

C.M.G., companion of the order of St. Michael and St. George.

Co., company or county.

C.O.D., cash on delivery.

Cr., creditor.

Crim. con., criminal conversation.

C.S., civil service, clerk to the signet.

C.S.I., companion of the Star of India.

Ct., Connecticut.

Curt., current, the present month.

Cwt., hundredweight.

d., *denarius*, penny or pence.

D.C., district of Columbia.

D.C.L., doctor of civil law.

D.D., doctor of divinity.

Del., *delineavit*, drew it.

D.F., defender of the faith.

D.G., *Dei gratia*, by the grace of God.

D.L., deputy lieutenant.

D.Lit., doctor of literature.

Do., *ditto*, the same.

D.O.M., *Deo Optimo Maximo*, to God, the best and greatest.

Dr., doctor, also debtor.

D.Sc., doctor of science.

D.V., *Deo volente*, God willing.

Dwt., pennyweight.

E., east.

Ebor., *Eboracensis*, of York.

E.C., established church.

E.E., errors excepted.

e.g., *exempli gratia*, for example.

E.I., East Indies.

Etc. or &c., *et cetera*, and the rest

Exr., executor.

ABBREVIATIONS.

- F. or Fahr.**, Fahrenheit's thermometer.
F.A.S., fellow of the Antiquarian Society.
F.C., Free Church.
F.D., *fidei defensor*, defender of the faith.
Fec., *fecit*, he made or did it.
F.G.S., fellow of the Geological Society.
F.H.S., fellow of the Horticultural Society.
Fl., flourished.
Fla., Florida.
F.L.S., fellow of the Linnæan Society.
F.M., field-marshal.
F.O.B., free on board (goods delivered).
F.R.A.S., fellow of the Royal Astronomical (or Asiatic) Society.
F.R.C.P., fellow of the Royal College of Physicians.
F.R.C.S., fellow of the Royal College of Surgeons.
F.R.G.S., fellow of the Royal Geographical Society.
F.R.S., fellow of the Royal Society.
F.R.S.E., fellow of the Royal Society of Edinburgh.
F.S.A., fellow of the Society of Arts or Antiquaries.
F.S.S., fellow of the Statistical Society.
Ft., foot or feet.
F.Z.S., fellow of the Zoological Society.
Ga., Georgia.
Gal., gallon.
G.C.B., grand cross of the Bath.
G.C.M.G., grand cross of St. Michael and St. George.
G.C.S.I., grand commander of the Star of India.
G.P.O., general post-office.
H.B.M., his or her Britannic majesty.
H.E.I.C.S., honourable East India Company's service.
Hhd., hogshead.
H.I.H., his or her imperial highness.
H.M.S., his or her majesty's ship.
Hon., honourable.
H.R., house of representatives.
H.R.H., his (her) royal highness.
H.S.H., his (her) serene highness.
Ia., Iowa.
Ib. or Ibid., *ibidem*, in the same place.
Id., *idem*, the same.
i.e., *id est*, that is.
+I.H.S., *Jesus hominum salvator*, Jesus the Saviour of men; originally it was **IHS**, the first three letters of **IHSOTZ** (*Iêsous*), *Jesus*.
Incog., *incognito*, unknown.
Inf., *infra*, below.
I.N.R.I., *Jesus Nazareus Rex Iudæorum*, Jesus of Nazareth, King of the Jews.
Inst., instant, or of this month; institute.
I.O.U., I owe you.
i.q., *idem quod*, the same as.
J.P., justice of the peace.
Jr., junior.
J.U.D., *juris utriusque doctor*, doctor both of the civil and the canon law.
K.C.B., knight commander of the Bath.
K.C.M.G., knight commander of St. Michael and St. George.
K.C.S.I., knight commander of the Star of India.
K.G., knight of the Garter.
K.G.C.B., knight grand cross of the Bath.
K.P., knight of St. Patrick.
K.T., knight of the Thistle.
Kt. or Knt., knight.
Ky., Kentucky.
L, l, or £, pounds sterling.
L.A., literate in arts.
Lat., latitude.
Lb. or lb., *libra*, a pound (weight).
L.C.J., lord chief-justice.
Ldp., lordship.
L.D.S., licentiate in dental surgery.
Lit. D., doctor of literature.
L.L., Low Latin.
L.L.A., lady literate in arts.
LL.B., *legum baccalaureus*, bachelor of laws.
LL.D., *legum doctor*, doctor of laws (that is, the civil and the canon law).
LL.M., master of laws.
Lon. or Long., longitude.
L.R.C.P., licentiate Royal College of Physicians.
L.R.C.S., licentiate of the Royal College of Surgeons.
L.S.A., licentiate of the Society of Apothecaries.
L.S.D., *libræ, solidi, denarii*, pounds, shillings, pence.
M.A., master of arts.
Mass., Massachusetts.
M.B., *medicinæ baccalaureus*, bachelor of medicine.
M.C., member of congress; master in surgery.
M.D., *medicinæ doctor*, doctor of medicine.
Md., Maryland.
Me., Maine.
M.E., mining engineer; Methodist Episcopal.
Messrs., messieurs, gentlemen.
M.F.H., master of fox-hounds.
M.I.C.E., member of the Institute of Civil Engineers.
Mlle., mademoiselle.
Mme., madame.
Mo., Missouri.
M.P., member of Parliament.
M.R.C.S., member of the Royal College of Surgeons.
M.R.C.V.S., member of the Royal College of Veterinary Surgeons.
M.R.I.A., member of the Royal Irish Academy.
MS., manuscript; **MSS.**, manuscripts.
Mus.D., *musicæ doctor*, doctor of music.
N., north.
N.B., *nota bene*, take notice; also North Britain, New Brunswick.
N.C., North Carolina.
N.D., no date.
Nem. con., *nemine contradicente*, no one contradicting, unanimously.
N.H., New Hampshire.
N.J., New Jersey.
No. numero, number.
N.P., notary public.
N.S., new style, Nova Scotia.
N.S.W., New South Wales.
N.T., New Testament.
N.Y., New York.
N.Z., New Zealand.
O., Ohio.
Ob., *obit*, died.
O.S., old style.
O.T., Old Testament.
Oxon., *Oxoniensis*, of Oxford.
Oz., ounce or ounces.
Pa., Pennsylvania.
P.C., privy-councillor.
P.E., Protestant Episcopal.
Per cent., *per centum* by the hundred.
Ph.D., *philosophiæ doctor*, doctor of philosophy.
Pinx., *pinxit*, painted it.
P.M., *post meridiem*, afternoon.
P.O., post-office.
P.O.O., post-office order.
P.P., parish priest.
Pp., pages.

P.F.C., *pour prendre congé*, to take leave.
 Prox., *proximo (mense)*, next month.
 P.S., postscript.
 Q., question; queen.
 Q.C., queen's council.
 Q.E.D., *quod erat demonstrandum*, which was to be demonstrated.
 Q.E.F., *quod erat faciendum*, which was to be done.
 Qu., query.
 Quant. suff., *quantum sufficit*, as much as is needful.
 Q.V., *quod vide*, which see.
 R., *rex, regina*, king, queen.
 R.A., royal academician; royal artillery.
 R.A.M., Royal Academy of Music.
 R.C., Roman Catholic.
 R.E., royal engineers.
 Rev., reverend.
 R.H.A., Royal Hibernian Academician.
 R.I., Rhode Island.
 R.I.P., *requiescat in pace*, may he rest in peace.
 R.M., royal marines.
 R.N., royal navy.
 R.S.A., royal Scottish academician.
 R.S.V.P., *répondez, s'il vous plait*, reply, if you please.
 Rt. Hon., right honourable.
 Rt. Wpful., right worshipful.
 R.V., revised version.
 S., south.
 S. or St., saint.
 S.C., South Carolina.
 Sc., *scilicet*, namely, viz.
 S.J., Society of Jesus (Jesuits).
 S.P.C.K., Society for Promoting Christian Knowledge.
 S.P.Q.R., *senatus populusque Romanus*, the senate and people of Rome.
 S.S.C., solicitor before the supreme courts.
 St., saint, street.
 S.T.D., *sacrae theologiae doctor*, doctor of divinity.
 S.T.P., *sacrae theologiae professor*, professor of divinity.
 T.C.D., Trinity College, Dublin.
 Ult., *ultimo*, last.
 U.P., United Presbyterian.
 U.S., United States.
 U.S.A., United States of America.
 U.S.N., United States navy.
 V., *vide*, see; also *versus*, against.
 Va., Virginia.
 V.C., Victoria Cross.
 Viz., *videlicet*, to wit, or namely.
 V.P., vice-president.
 V.S., veterinary surgeon.
 Vt., Vermont.
 W., west.
 W.I., West Indies.
 W.S., writer to the signet.
 Xmas, Christmas.
 In LL.D., LL.B., &c., the letter is doubled, according to the Roman system, to show that the abbreviation represents a plural noun.

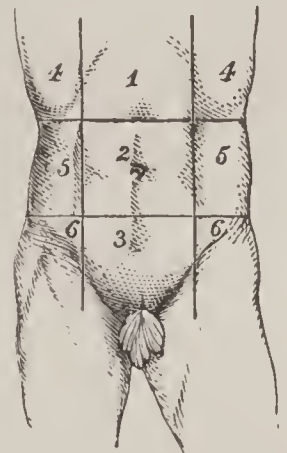
Abd-el-Ka'der, an Arab chief born in Algeria, 1807; died at Damascus, 1883. He was the chief opponent of the French in their conquest of Algeria, but at last surrendered to them in 1847, and was imprisoned till set at liberty by Napoleon III. in 1852. He latterly resided chiefly at Da-

mascus, but made various journeys, and visited the Paris exhibition of 1867. He wrote a religious work in Arabic.

Abde'ra, an ancient Greek city on the Thracian coast, the birthplace of Democritus (the laughing philosopher), Anaxarchus, and Protagoras. Its inhabitants were proverbial for stupidity.

Abdica'tion, properly the voluntary, but sometimes also the involuntary resignation of an office or dignity, and more especially that of sovereign power. Abdication does not necessarily require the execution of a formal deed, but may be presumed from facts and circumstances, as in the case of the English Revolution in 1688, when, after long debate, it was resolved by both houses of parliament that King James II., having endeavoured to subvert the constitution of the kingdom, had '*abdicated* the government, and that the throne is thereby vacant.' Yet the sovereign of Great Britain cannot constitutionally abdicate without the consent of both houses of parliament.

Abdo'men, in man, the belly, or lower cavity of the trunk, separated from the upper cavity or thorax by the diaphragm or midriff, and bounded below by the bones of the pelvis. It contains the viscera belonging to the digestive and urinary systems. What are called the *abdominal regions* will be understood from the accompanying cut, in which 1 is the *epigastric* region, 2 the *umbilical*, 3 the *pubic*, 4 4 the right and left *hypo-chondriac*, 5 5 the right and left *lumbar*, 6 6 right and left *iliac*. The name is given to the corresponding portion of the body in other animals. In insects it comprises the whole body behind the thorax, usually consisting of a series of rings.



Abdominal Regions.

Abdom'inal Fishes (*Abdomināles*), a group of the soft-finned (or malacopterous) fishes, having fins upon the abdomen, and comprising the herring, pike, salmon, carp, &c.

Abduc'tion, a legal term, generally applied to denote the offence of carrying off a female, either forcibly or by fraudulent representations. Such a delinquency in regard to a man is styled *kidnapping*. There are various descriptions of abduction recognized in cri-

minal jurisprudence, such as that of a child, of an heiress, or of a wife.

Ab'dul-Az'iz, Sultan of Turkey, brother to Abdul-Mejid, whom he succeeded in June, 1861. He concluded treaties of commerce with France and England, both of which countries he visited in 1867. Deposed in May, 1876, he committed suicide, or more probably was assassinated, in June, the same year. He was succeeded by his son Murad V. See next art.

Ab'dul-Ham'id, Sultan of Turkey, younger son of Abdul-Mejid, born in 1842, succeeded his brother Murad V., who was deposed on proof of his insanity in 1876. At that time Turkey, which was at war with Servia, was compelled to agree to an armistice at the demand of Russia. The persecution and oppression of the Christian population of Bulgaria had roused remonstrances from other European countries, and a congress met at Constantinople to consider a constitution which the Porte had proclaimed. The conference was a failure, and in April, 1877, war was declared by Russia. During the sanguinary struggle which ensued the Turks fought with great bravery, but they had ultimately to sue for peace. A treaty was signed at San Stefano in Feb. 1878, but its provisions were modified by a congress of the great powers which met at Berlin. Turkey was compelled to part with some of its choicest provinces, while the sultan also ceded the island of Cyprus to be occupied and administered by Britain, which in turn agreed to guarantee his Asiatic dominions to the sultan. Abdul-Hamid's reign was further disturbed in 1885 by a revolution in Eastern Roumelia, the people of which have elected to be joined to Bulgaria. See under *Turkey*.

Abd-ul-Lat'if, an Arab writer and physician, born at Bagdad in 1161, died there in 1231. He was patronized by the celebrated Saladin, and published an excellent description of Egypt, which is still extant.

Ab'dul-Mej'id Khan, Sultan of Turkey, born in 1822 or 1823, succeeded his father, Mahmud II., 1st July, 1839. At the time of his accession Mehemet, Pasha of Egypt, had a second time risen against the Turkish yoke; his son Ibrahim had inflicted a severe defeat on the Turks at Nizib (24th June, 1839), and was advancing on Constantinople. But the intervention of the leading European powers checked the designs of Mehemet Ali, and saved the Turkish empire. Abdul-Mejid was desirous of carry-

ing out reforms, but most of them remained inoperative, or caused bloody insurrections where attempts were made to carry them out. Owing to disputes between the Latin and Greek Churches regarding the rights of precedence and possession at the 'holy places' in Palestine, and to demands made by the czar virtually implying the right of protectorate over the Christian subjects of the sultan, war broke out between Turkey and Russia in 1853. In the following year the Porte effected an alliance with France and England (hence the Crimean War), and later on with Sardinia. (See *Crimean War*.) Abdul-Mejid died in 1861, and was succeeded by his brother, Abdul-Aziz.

Abeceda'rian, a term formed from the first four letters of the alphabet, and applied to the followers of Storch, a German Anabaptist, in the sixteenth century, because they rejected all worldly knowledge, even the learning of the alphabet.

À Beck'ett, GILBERT ABBOT, English writer, born near London, in 1811. He studied for the bar, and became one of the original staff of Punch, was long a leader-writer of the Times and Morning Herald, and contributed articles to the Illustrated London News. He wrote *Comic History of England*, *Comic History of Rome*, and *Comic Blackstone*, and between fifty and sixty plays, some of which still keep the stage. In 1849 he was appointed a metropolitan police magistrate, an office he retained till his death in 1856.

À Beckett, THOMAS. See *Beckett*.

Abel, properly *Hebel* (Heb. breath, vapour, transitoriness), the second son of Adam. He was a shepherd, and was slain by his brother Cain from jealousy because his sacrifice was accepted, while Cain's was rejected. Several of the fathers, among others St. Chrysostom and Augustin, regard him as a type of Christ.

Abelard (ab'e-lärd) (or ABAILARD), PETER, a celebrated scholastic teacher, born near Nantes in Brittany, in 1079. He made extraordinary progress with his studies, and, ultimately eclipsing his teachers, he opened a school of scholastic philosophy near Paris, which attracted crowds of students from the neighbouring city. His success in the fiery debates which were then the fashion in the schools made him many enemies, among whom was Guillaume de Champeaux, his former teacher, chief of the cathedral school of Notre-Dame, and the most advanced of the Realists. Abelard succeeded his adver-

ary in this school (in 1113), and under him were trained many men who afterwards rose to eminence, among them being the future Pope Celestin II., Peter Lombard, and Arnold of Brescia. While he was at the height of his popularity, and in his fortieth year, he became infatuated with a passion for Heloise—then only eighteen years of age—niece of Fulbert, a canon of Paris. Obtaining a home in Fulbert's house under the pretext of teaching Heloise philosophy, their intercourse at length became apparent, and Abelard, who had retired to Brittany, was followed by Heloise, who there gave birth to a son. A private marriage took place, and Heloise returned to her uncle's house, but refusing to make public her marriage (as likely to spoil Abelard's career), she was subjected to severe treatment at the hands of her uncle. To save her from this Abelard carried her off and placed her in a convent at Argenteuil, a proceeding which so incensed Fulbert that he hired ruffians who broke into Abelard's chamber and subjected him to a shameful mutilation. Abelard, filled with grief and shame, became a monk in the abbey of St. Denis, and Heloise took the veil. When time had somewhat moderated his grief he resumed his lectures; but trouble after trouble overtook him. His theological writings were condemned by the Council of Soissons, and he retired to an oratory called the Paraclete, subsequently becoming head of the abbey of St. Gildas-de-Rhuys in Brittany. For a short time he again lectured at Paris (1136), but his doctrines again brought persecution on him, and St. Bernard had him condemned by the council of Sens and afterwards by the pope. Abelard did not long survive this, dying at St. Marcel, near Châlon-sur-Saône, 1142. Heloise, who had become abbess of the Paraclete, had him buried there, where she herself was afterwards laid by his side. Their ashes were removed to Paris in 1800, and in 1817 they were finally deposited beneath a mausoleum in the cemetery of Père la Chaise. Abelard is credited with the invention of a new philosophical system, midway between Realism and Nominalism. A complete edition of his works was published by Cousin (2 vols. Paris, 1849-59), and the letters of Abelard and Heloise have been often published in the original and in translations.

Abele (a-bél'), a name of the white poplar.

A'belite, **ABE'LIAN**, a member of a religious sect in Africa which arose in the

fourth century after Christ. They married, but lived in continence, after the manner, as they maintained, of Abel, and attempted to keep up the sect by adopting the children of others.

Abelmoschus (-mos'kus), a genus of tropical plants of the mallow family. *A. esculentus*, cultivated in India, Algeria, &c., yields edible pods and also a valuable fibre. The fruit, called *okro* or *ochro*, is used in soups.

Abencerrages (ab-en-ser'a-jez), a powerful and distinguished Moorish family of Granada, the chief members of which, thirty-six in number, are said to have been massacred in the Alhambra by the king Abu-Hassan (latter half of the fifteenth century) on account of the attachment of his sister to one of them—a legend which has furnished the subject of many poems both Arabic and Spanish, and formed the basis for Chateaubriand's *Aventures du dernier des Abencérages*.

Ab'en Ezra, a celebrated Jewish rabbi, born at Toledo about 1119, travelled in pursuit of knowledge in England, France, Italy, and Greece, and is supposed to have died in Rhodes about 1174. He particularly distinguished himself as a commentator on Scripture.

Abensberg (ä'béns-berh), a Bavarian manufacturing town with 2000 inhabitants; celebrated for Napoleon's victory over the Austrians, 20th April, 1809.

Abeoku'ta. See *Abbeokuta*.

Ab'er, a prefix in Celtic geographical proper names signifying the mouth or entrance of a river into the sea, or into another stream. It is used chiefly in Wales and Scotland, having the same meaning as *inver*.

Abera'von, a parliamentary borough (Swansea dist.) of Wales, in Glamorgan-shire, near the mouth of the Avon in Swansea Bay, embracing Aberavon proper and its harbour Port Talbot. There are collieries, ironworks, copper-works, &c. Pop. 1891, 6281.

Aberbroth'ock, the older form of **ARBROATH**.

Ab'ercrombie, **JOHN**, M.D., a Scottish writer on medical and moral science, and an eminent physician, born in Aberdeen, 1781, died at Edinburgh in 1844. He graduated at the university of Edinburgh in 1803, and subsequently pursued his studies in London, returning to Edinburgh in 1804, where he acquired an extensive practice as a physician. Apart from medical treatises,

he is known from his *Inquiries concerning the Intellectual Powers and his Philosophy of the Moral Feelings*.

Ab'ercrombie, PATRICK, a Scottish historical writer and antiquary, born at Forfar, 1656, date of death uncertain. Educated at St. Andrews and abroad, he took the degree of M.D., and practised as a physician in Edinburgh. In 1685 he was appointed physician to James II. His chief work is *Martial Atchievements of the Scots Nation*, 2 vols. folio, 1711-16.

Ab'ercromby, SIR RALPH, a British general, born in 1734 in Clackmannanshire, Scotland. He entered the army in 1756 as cornet in the 3d Dragoon Guards; and he gradually passed through all the ranks of the service until he became a major-general



General Sir Ralph Abercromby.

in 1787. He served as lieutenant-general in Flanders, 1793-95, and was then appointed commander-in-chief of the forces in the West Indies, where he captured the islands of Grenada, St. Lucia, St. Vincent, and Trinidad, with the settlements of Demerara and Essequibo. On his return in 1798 he was appointed commander-in-chief in Ireland; and he afterwards held a corresponding command in Scotland. His next and concluding service was in the expedition to Egypt, of which he was commander-in-chief. He landed, after a severe contest, at Aboukir, March 8, 1801; and on the 21st of the same month was fought the battle of Alexandria, in which Sir Ralph was mortally wounded.

Aberdare (-dār'), a town of South Wales, in Glamorganshire, pleasantly situated at

the junction of the Cynon and Dare, 4 miles south-west of Merthyr-Tydfil, with extensive coal and iron mines in the vicinity. It belongs to the parliamentary borough of Merthyr-Tydfil. Pop. 1891, 38,513.

Aberdeen', a royal and parliamentary burgh of Scotland, in the county of the same name, on the left bank of the Dee at its entrance into the German Ocean, and mainly on several slight eminences rising above the river. It is one of the oldest towns in Scotland. Constituted a royal burgh by William the Lion, 1179, it was burned by the English in 1336, but soon rebuilt, when it was called *New Aberdeen*. The streets are generally spacious and regular, the houses built of fine grayish-white granite. It has many handsome public buildings, as the County and Municipal Buildings, Marischal College, Grammar School, Infirmary, Arts School, Music Hall Buildings, &c. The finest street, Union Street, is carried over a valley by a granite bridge, having an arch of 132 feet span: there are also three bridges over the Dee, besides a railway viaduct. There is a tidal harbour of about 18 acres, and a dock 28 acres in extent. The harbour entrance is protected by a pier 2600 feet long, and a breakwater 1050 feet long. The shipping trade is extensive. Among the industries are woollen, cotton, jute, and linen factories; large combworks, soap and candle works, provision-curing works, chemical works, paper works, ship-building yards, and establishments for preparing granite for all sorts of useful and ornamental work. The parliamentary burgh (which also includes Old Aberdeen and Woodside) returns two members to the House of Commons. Pop. parl. burgh, 121,905.—**OLD ABERDEEN**, a small but ancient town and royal burgh, lies about a mile north of the new town, between it and the river Don. Its chief buildings are King's College and St. Machar's Cathedral. Noteworthy features of the college buildings are the crown-tower and the chapel, the latter containing some very fine old carved woodwork. The cathedral, now used as the parish church, was commenced about 1357. Over the Don is a fine old Gothic bridge of one arch, erected according to some accounts by Robert Bruce. Pop. 2168.—**THE COUNTY OF ABERDEEN** forms the north-eastern portion of Scotland, and is bounded on the east and north by the North Sea. Area, 1,251,451 acres. It is divided into six districts (Mar, Formartine, Buchan, Alford, Garioch, and Strathbogie), and is

generally hilly, there being in the south-west some of the highest mountains in Scotland, as Ben Macdhui (4295 feet), Cairntoul (4245), Cairngorm (4090), Lochnagar, &c. Its most valuable mineral is granite, large quantities of which are exported. The principal rivers are the Dee and the Don, both of which enter the sea at the town of Aberdeen. Cereals (except wheat) and other crops succeed well, and the number of acres under cultivation is nearly double that of any other Scottish county. Great numbers of cattle are fattened and sent to London and the south. On the banks of the upper Dee is situated Balmoral, a favourite residence of Queen Victoria. The county returns two members to parliament. Pop. 281,331.—**ABERDEEN UNIVERSITY**, as now constituted, derives its origin from two different foundations; one, the University and King's College (Old Aberdeen), founded in 1494 by Bishop Elphinstone, under the authority of a papal bull obtained at the instance of James IV.; the other, Marischal College and University (New Aberdeen), founded in 1593 by Geo. Keith, Earl Marischal, by a charter ratified by act of parliament. The two foundations existed as separate universities, both having the right of conferring degrees, till 1860, when they were united and incorporated into one university, the University of Aberdeen. Holding the funds of both colleges and ranking from 1494, the university has about 300 bursaries or exhibitions, mostly open to public competition, and a number of money prizes and scholarships. The classes for arts and divinity are held in King's College, and those for law and medicine in Marischal College. There is a full teaching staff in the faculties of arts, medicine, and divinity, and two professors in the faculty of law. There are in all 22 professors and over 800 matriculated students. The constitution of the university is similar to that of Edinburgh and the other Scottish universities. The library numbers over 80,000 volumes. The university unites with that of Glasgow in sending one member to parliament.

Aberdeen', **GEORGE HAMILTON GORDON, EARL OF**, British statesman, born in 1784, died in 1860. He began his diplomatic life in 1801 as attaché to Lord Cornwallis's embassy to France, which resulted in the signing of the treaty of Amiens. In 1806 he entered parliament as a Scottish representative peer, and in 1813 was intrusted with a successful mission to Austria for the

purpose of inducing the emperor to join the coalition of sovereigns against Bonaparte. In 1814 he was created a British peer, and in 1828 he became foreign secretary under the Duke of Wellington's administration. During the short premiership of Sir Robert



Earl of Aberdeen.

Peel in 1834-35 he acted as colonial secretary, and when Sir Robert again became premier in 1841 he took office as secretary for foreign affairs. Quitting office with his chief in 1846, he came, on the death of Peel in 1850, to be regarded as the leader of the Conservative free-trade party. On the Derby ministry failing to maintain its place Lord Aberdeen returned to office in the end of 1852 as head of a coalition ministry. The principal event which marked his administration was the Crimean war; but the bad management of this irritated the country, and the ministry resigned in 1855. This event marks the close of Lord Aberdeen's public career. From his travels and his acquaintance with Greece and its antiquities he was called by Byron 'the travelled thane, Athenian Aberdeen.'

Ab'erdevine. See *Siskin*.

Abergavenny (generally pron. ab-ér-gā'ni), a town of England, in Monmouthshire. It manufactures woollens and shoes, and has a considerable trade, there being extensive coal and iron mines in the vicinity. Pop. 1891, 7640.

Abernethy (ab-ér-neth'i), **JOHN**, an eminent English surgeon, of somewhat eccentric habits, born in 1764 in London, a pupil of the

celebrated John Hunter. In 1787 he became assistant surgeon to St. Bartholomew's Hospital, and shortly after lecturer on anatomy and surgery. In 1815 he was elected principal surgeon, and under his auspices the hospital attained a celebrity which it had never before enjoyed. He published *Surgical Observations; The Constitutional Origin and Treatment of Local Diseases; and Lectures, explanatory of Hunter's opinions of the vital processes; besides smaller essays.* He died in 1831.

Aberra'tion, in astronomy, the difference between the true and the observed position of a heavenly body, the result of the combined effect of the motion of light and the motion of the eye of the observer caused by the annual or diurnal motion of the earth; or of the motion of light and that of the body from which the light proceeds. When the auxiliary cause is the annual revolution of the earth round the sun it is called *annual aberration*, in consequence of which a fixed star may appear as much as $20''\cdot4$ from its true position; when the auxiliary cause is the diurnal rotation of the earth on its axis it is called *diurnal aberration*, which amounts at the greatest to $0''\cdot3$; and when the auxiliary cause is the motion of the body from which the light proceeds it is called *planetary aberration*.

Abersychan (ab-ér-sik'an), a town of Monmouthshire, England, about 10 miles north from Newport, in a rich coal-mining district. Pop. 1891, 15,296.

Aberystwith (ab-ér-ist'with), a seaport and fashionable watering-place of Wales, county of Cardigan, on Cardigan Bay. The town is well built, and the environs are picturesque. There is here a University College occupying a handsome Gothic building. Pop. 1891, 6696.

Abgar, an Oriental ruler of the time of the Roman emperor Tiberius (A.D. 14-37), said to have written a letter to our Saviour.

Abhor'ers, in English history a name given to the court party in 1679-80, who, on petitions being presented to Charles II. praying him to summon parliament, signed counter-petitions expressing *abhorrence* for those who were thus attempting to encroach on the royal prerogative.

A'bib, the first month of the Jewish ecclesiastical year, and the seventh of the civil year, corresponding to the latter part of March and the first of April. Also called *Nisan*.

Abies (ab'i-es), a genus of trees. See *Fir* and *Spruce*.

Ab'ingdon, a town of England, in Berkshire, 50 miles north-west of London, on the right bank of the Thames. It was an important place in Anglo-Saxon times, and Offa, king of Mercia, had a palace in it. Formerly a parl. bor., it now gives name to a parl. div. of Berks. Pop. 1891, 6557.

Abiogenesis (a-bi-o-jen'e-sis), the doctrine or hypothesis that living matter may be produced from non-living; spontaneous generation. See *Generation (Spontaneous)*.

Abjura'tion, OATH OF, an oath which by an English act passed in 1701 had to be taken by all holders of public offices, clergymen, teachers, members of the universities, and lawyers, adjuring and renouncing the exiled Stuarts' superseded in 1858 by a more comprehensive oath, declaring allegiance to the present royal family.—*Abjuration of the realm* was an oath that a person guilty of felony, and who had taken sanctuary, might take to go into exile, and not return on pain of death.

Abka'sia, a Russian district, at the western extremity and south of the Caucasus, between the mountains and the Black Sea. The Abkasians form a race distinguished from their neighbours in various respects. At one time they were Christians, but latterly adopted Mohammedanism. Recently many of them have migrated into Turkish territory.

Ab'lative, a term applied to a case of nouns, adjectives, and pronouns in Latin, Sanskrit, and some other languages; originally given to the case in Latin because separation from (*ab*, from, *latus*, taken) was considered to be one of the chief ideas expressed by the case.

Abo (ō'bō), a town and port in Russian Finland, the see of an archbishop, and the capital of Finland till 1819, when it was supplanted by Helsingfors. Pop. 23,000.

Abolitionists. See *Slavery*.

Aboma'sum, ABOMA'SUS, the fourth stomach of ruminating animals, next the *omasum* or third stomach.

Abo'mey, or AGBO'MEY, the capital of the kingdom of Dahomey, in West Africa, in a fertile plain, near the coast of Guinea. Pop. 30,000.

Aborigines (ab-o-rij'i-nēz), the name given in general to the earliest known inhabitants of a country, those who are supposed to have inhabited the land from the beginning (L. *ab origine*). [The singular of the word is *Aboriginal*, or incorrectly *Aboriginé*.]

Abortion, in medicine, the expulsion of

the foetus before it is capable of independent existence. This may take place at any period of pregnancy before the completion of the twenty-eighth week. A child born after that time is said to be *premature*. Abortion may be the result of the general debility or ill-health of the mother, of a plethoric constitution, of special affections of the uterus, of severe exertions, sudden shocks, &c. Various medicinal substances, generally violent emmenagogues or drastic medicines, are believed to have the effect of provoking abortion, and are sometimes resorted to for this purpose. Attempts to procure abortion are punishable by law in all civilized states.—The term is applied in botany to denote the suppression by non-development of one or more of the parts of a flower, which consists normally of four whorls—namely, calyx, corolla, stamens, and pistil.

Aboukir (à-bö-kēr'; ancient *Canopus*), a small village on the Egyptian coast, 10 miles east of Alexandria. In Aboukir Bay took place the naval battle in which Nelson annihilated a French fleet on the night of 1st and 2d August, 1798, thus totally destroying the naval power of France in the Mediterranean. Near this place on 25th July, 1799, Napoleon defeated the Turks under Mustapha; and on March 8, 1801, Sir Ralph Abercromby effected the landing of a British army against the French.

Abou-Simbel. See *Ipsambul*.

About (à-bö), EDMOND FRANÇOIS VALENTIN, a French novelist and miscellaneous writer, born in 1828, died in 1885. He was educated at the Lycée Charlemagne and the École Normale, Paris; was sent at government expense to the French school at Athens; on his return to Paris, devoted himself to literature. Principal novels: *Tolla*, *Le Roi des Montagnes*, *Germaine*, *Madelon*, *Le Fellah*, *La Vieille Roche*, *L'Infâme*, *Les Mariages de Province*, *Le Roman d'un Brave Homme*, &c.; miscellaneous works: *La Grèce Contemporaine*, *La Question Romaine*, *La Prusse en 1860*, *Rome Contemporaine*, &c. He was latterly elected a member of the Academy. About wrote in a bright, humorous, and interesting style, and his novels have been very popular.

Abracadab'ra, a word of eastern origin used in incantations. When written on paper so as to form a triangle, the first line containing the word in full, the one below it omitting the last letter, and so on each time until only one letter remained, and

worn as an amulet, it was supposed to be an antidote against certain diseases.

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A B R A C A D A B R A
  A B R A C A D A B R
    A B R A C A D A B
      A B R A C A D A
        A B R A C A D
          A B R A C A
            A B R A C
              A B R A
                A B R
                  A B
                    A

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A'braham, originally **ABRAM**, the greatest of the Hebrew patriarchs, was born at Ur in Chaldea in 2153 B.C. according to Hales, in 1996 B.C. according to Ussher, while Bunsen says he lived 2850 B.C. He migrated, accompanied by his wife Sarah and his nephew Lot, to Canaan, where he led a nomadic life, which extended over 175 years. His two sons Isaac and Ishmael were the progenitors of the Jews and Arabs respectively.

Abraham, HEIGHTS or PLAINS OF. See *Quebec*.

Abraham à Santa Clara, a German pulpit orator, real name **ULRICH MEGERLE**, born in 1642. As a preacher he acquired so great a reputation that in 1669 he was appointed court-preacher in Vienna, where he died in 1709. His sermons are full of homely, grotesque humour, often of coarse wit, and impartial severity towards all classes of society.

Abraham-men, originally a set of mendicant lunatics from Bethlehem Hospital, London; but as many assumed, without right, the badge worn by them the term came to signify an impostor who travelled about the country seeking alms, under the pretence of lunacy.

Ab'ramis, a genus of fishes. See *Bream*.

Abran'tes, a fortified town of Portugal, on the right bank of the Tagus (here navigable), 73 miles N.E. of Lisbon, with which it carries on an active trade. Pop. 6076.

Abrantes, DUKE OF. See *Junot*.

Abrax'as (or **ABRASAX**) **Stones**, the name given to stones or gems found in Syria, Egypt, and elsewhere, cut into almost every variety of shape, but generally having a human trunk and arms, with a cock's head, two serpents' tails for the legs, &c., and the word *Abraxas* or *Abrasax* in Greek characters engraved upon them. They appear to have been first used by the Gnostic sect,

and eventually came to be used as talismans.

Abroga'tion, the repealing of a law by a competent authority.

Abro'ma, a genus of small trees, natives of India, Java, &c., one species of which, *A. augusta*, has a bark yielding a strong white fibre, from which good cordage is made.

Abrupt', in botany, terminating suddenly, as if a part were cut short off.

Ab'rus, a genus of papilionaceous plants, order Leguminosæ, one species of which, *Abrus precatorius*, a delicate twining shrub, a native of the East Indies, and found also in tropical parts of Africa and America, has round brilliant scarlet seeds, used to make necklaces and rosaries. Its root is sweetish and mucilaginous, and is used as a substitute for liquorice under the name of *Indian liquorice*.

Abruzzi (â-brüt'sē), a division of Italy on the Adriatic, between Umbria and the Marches on the north, and Apulia on the south, comprising the provinces of Abruzzo Citeriore, Abruzzo Ulteriore I., and Abruzzo Ulteriore II., which, along with Molise, form a government (*compartimento*). The sea-coast of about 80 miles does not possess a single harbour. The interior is rugged and mountainous, being traversed throughout by the Apennines. The lower parts consist of fertile plains and valleys, yielding corn, wine, oil, almonds, saffron, &c.; area, 6677 sq. miles; pop. 1,386,817.

Ab'salom, or AXEL, a Danish prelate, statesman, and warrior, born in 1128, died 1201 or 1202. He became the intimate friend and counsellor of his sovereign Walde-mar I., who appointed him Archbishop of Lund. He cleared the sea of the Slavonic pirates who had long infested it, secured the independence of the kingdom by defeating a powerful fleet of the Emperor Barbarossa, and built the castle of Axelborg, the nucleus of Copenhagen. Turning his thoughts to literature he caused the History of Denmark to be drawn up by Saxo Grammaticus and Sueno Agesen.

Ab'scess, any collection of purulent matter or pus formed in some tissue or organ of the body, and confined within some circumscribed area, of varying size, but always painful and often dangerous.

Absentee', the name which has been given to a person who possesses property in one country, and resides and spends his income in another. This practice is especially prevalent among Irish land-owners, and many

political economists have ascribed much of the poverty and discontent in Ireland to absenteeism.

Ab'sinth, French ABSINTHE (âb-sant), a liqueur consisting of an alcoholic solution strongly flavoured with an extract of several sorts of wormwood, oil of anise, &c. When taken habitually, or in excess, its effects are very pernicious. It is a favourite drink of the Parisians.

Ab'solute, in a general sense, loosed or freed from all limitations or conditions. In politics, an *absolute* monarchy is that form of government in which the ruler is unlimited or uncontrolled by constitutional checks. In modern metaphysics *the Absolute* represents the unconditioned, infinite, and self-existent.

Absolu'tion, remission of a penitent's sins in the name of God. It is commonly maintained that down to the twelfth century the priests used only what is called the *precatory* formula, 'May God or Christ absolve thee,' which is still the form in the Greek Church; whereas the Roman Catholic uses the expression 'I absolve thee,' thus regarding the forgiveness of sins as in the power of the priest (the *indicative* form). This theory of absolution was confirmed by the Council of Trent. The passages of Scripture on which the Roman Catholic Church founds in laying down its doctrine of absolution are such as Mat. xvi. 19; xviii. 18; John xx. 23. Among Protestants absolution properly means a sentence by which a person who stands excommunicated is released from that punishment.

Absorb'bents, the system of minute vessels by which the nutritive elements of food and other matters are carried into the circulation of vertebrate animals. The vessels consist of two different sets, called respectively *lacteals* and *lymphatics*. The former arise from the digestive tract, the latter from the tissues generally, both joining a common trunk which ultimately enters the blood-vessel system. Absorbents in medicine are substances such as chalk, charcoal, &c., that absorb or suck up excessive secretion of fluid or gas.

Absorp'tion, in physiology, one of the vital functions by which the materials of nutrition and growth are absorbed and conveyed to the organs of plants and animals. In vertebrate animals this is done by the lymphatics and lacteals, in plants chiefly by the roots. See *Absorbents*.

In physics, *absorption of colour* is the phenomenon observed when certain colours

are retained or prevented from passing through transparent bodies; thus pieces of coloured glass are almost opaque to some parts of the spectrum, while allowing other colours to pass through freely.

Ab'stinance. See *Fasting, Temperance.*

Abstrac'tion, the operation of the mind by which it disregards part of what is presented to its observation in order to concentrate its attention on the remainder. It is the foundation of the operation of generalization, by which we arrive at general conceptions. In order, for example, to form the conception of a horse, we disregard the colour and other peculiarities of the particular horses observed by us, and attend only to those qualities which all horses have in common. In rising to the conception of an animal we disregard still more qualities, and attend only to those which all animals have in common with one another.

Abu (*a-bö'*), a granitic mountain of India in Sirohi state, Rajputána, rising precipitously from the surrounding plains, its top forming a picturesque and varied tract 14 miles long and 2 to 4 broad; highest point 5653 ft. It is a hot-weather resort of Europeans, and is the site of two most beautiful Jain temples.

Abu-Bekr, or FATHER OF THE VIRGIN, the father-in-law and first successor of Mohammed. His right to the succession was unsuccessfully contested by Ali, Mohammed's son-in-law, and a schism took place, which divided the Mohammedans into the two great sects of Sunnites and Shiites, the former maintaining the validity of Abu-Bekr's and the latter that of Ali's claim.

Abukir'. See *Aboukir.*

Abu Klea, a group of wells, surrounded by steep, black mountains, about 120 miles from Khartoum, in the Soudan, where, on the 17th January, 1885, Sir Herbert Stewart, with 1500 men, defeated the Mahdi's troops, numbering 10,000.

Abulfara'gius, GREGORY, a distinguished scholar, a Jew by birth (hence the name of *Barhebreus*, often given him), author of numerous works in Arabic and Syriac, was born in Armenia in 1226, died in 1286. About 1264 he was ordained bishop of Guba, afterwards of Aleppo, and about 1264 was appointed primate of the Jacobite Christians. His principal work is a History of the World, from the creation to his own day, written in Syriac, with an abridged version in Arabic, entitled The Abridged History of the Dynasties.

Abul'feda, Arab writer, Prince of Hamah, in Syria, of the same family that had produced Saladin, famous as an historian and geographer, was born at Damascus 1273, died 1331. Amid the cares of government he devoted himself with zeal to study, drew the learned around him, and rendered his power and wealth subservient to the cause of science. His most important works are his History of the Human Race (the portion from the birth of Mohammed to his own time being valuable), and his geography, called The True Situation of Countries.

Abury (*ā'be-ri*). See *Avebury.*

Abushehr (*ā-bö-shār'*). See *Bushire.*

Abu-Simbel. See *Ipsambul.*

Abu'tilon, a genus of plants, order Malvaceæ, sometimes called Indian mallows, inhabiting the East Indies. Australia, Brazil, Siberia, &c. Several of them yield a valuable hemp-like fibre, as *A. indicum* and *A. aricenna*. The latter, now a troublesome weed in the Middle United States, has been recommended for cultivation, and is sometimes called American jute.

Abut'ment, the part of a bridge which receives and resists the lateral outward thrust of an arch; the masonry, rock, or other solid materials from which an arch springs.

Aby'dos (1), an ancient city of Asia Minor, on the Hellespont, at the narrowest part of the strait, opposite Sestos. Leander, say ancient writers, swam nightly from Abydos to Sestos to see his loved Hero—a feat in swimming accomplished also by Lord Byron. —(2), an ancient city of Upper Egypt, about 6 miles west of the Nile, now represented only by ruins of temples, tombs, &c. It was celebrated as the burying-place of the god Osiris, and its oldest temple was dedicated to him. Here, in 1818, was discovered the famous *Abydos Tablet*, now in the British Museum, and containing a list of the predecessors of Rameses the Great, which was supplemented by the discovery of a similar historical tablet in 1864.

Abyssin'ia (Arabic *Habesh*) a country of Eastern Africa, which, roughly speaking, may be said to extend from lat. 8° to 16° N. and lon. 35° to 41° E.; having Nubia on the N.W., the Soudan on the W., the Red Sea littoral and the Danâkil territory on the E., and the country of the Gallas on the S.; total area about 120,000 sq. m.; chief divisions Tigré, Amhara, and Shoa. It is as a whole an elevated region, with a general slope to the north-west. The more marked

ABYSSINIA.

physical features are a vast series of table-lands, of various and often of great elevations, and numerous masses or ranges of high and rugged mountains, dispersed over the surface in apparently the wildest confusion. Along the deep and tremendous ravines that divide the plateaux rush innumerable streams, which impart extraordinary fertility to the plains and valleys below. The mountains in various parts of the country rise to 12,000 and 13,000 feet, while some of the peaks are over 15,000 feet (Ras Dashan being 15,160), and are always covered with snow. The principal rivers belong to the Nile basin, the chief being the impetuous Tacczé ('the Terrible'), in the north, and the Abai in the south, the latter being really the upper portion of the Blue Nile. The principal lake is Lake Tzana or Dembea (from which issues the Abai), upwards of 6000



Abyssinian Priest.

feet above the sea, having a length of about 45 and a breadth of 35 miles. Round this lake lies a fertile plain, emphatically called the granary of the country. — According to elevation there are several zones of vegetation. Within the lowest belt, which reaches an elevation of 4800 feet, cotton, wild indigo, acacias, ebony, baobabs, sugar-canes, coffee-trees, date-palms, &c., flourish, while the larger animals are lions, panthers, elephants, rhinoceroses, hippopotamuses, jackals, hyenas, bears, numerous antelopes, monkeys, and crocodiles. The middle zone, rising to 9000 feet, produces the grains, grasses, and fruits of southern Europe, the orange, vine, peach, apricot, the bamboo, sycamore-tree, &c. The principal grains are millet, barley, wheat, maize, and teff, the latter a small seed, a favourite bread-stuff of the Abyssinians. Two, and in some places three, crops are obtained in

one year. All the domestic animals of Europe, except swine, are known. There is a variety of ox with immense horns. The highest zone, reaching to 14,000 feet, has but little wood, and generally scanty vegetation, the hardier corn-plants only being grown; but oxen, goats, and long-woolled sheep find abundant pasture. — The climate is as various as the surface, but as a whole is temperate and agreeable; in some of the valleys the heat is often excessive, while on the mountains the weather is cold. In certain of the lower districts malaria prevails. — The chief mineral products are sulphur, iron, copper, coal, and salt, the latter serving to some extent as money. There has been a great intermixture of races in Abyssinia. What may be considered the Abyssinians proper, seem to have a blood-relationship with the Bedouin Arabs. The complexion varies from very dark through different shades of brown and copper to olive. The figure is usually symmetrical. Other races are the black Gallas from the south; the Falashas, who claim descent from Abraham, and retain many Jewish characteristics; the Agows, Gongas, &c. The great majority of the people profess Christianity, belonging, like the Copts, to the sect of the Monophysites. Their religion consists chiefly in the performance of empty ceremonies, and gross superstition as well as ignorance prevails. The head of the church is called the Abuna ('our father'), and is consecrated by the Coptic patriarch of Alexandria. Geez or Ethiopian is the language of their sacred books: it has long ago ceased to be spoken. The chief spoken language is the Amharic; in it some books have been published. Mohammedanism appears to be gaining ground in Abyssinia, and in respect of morality the Moslems stand higher than the Christians. A corrupt form of Judaism is professed by the Falashas. — The bulk of the people are devoted to agriculture and cattle-breeding. The trade and manufactures are of small importance. A good deal of common cotton cloth and some finer woven fabrics are produced. Leather is prepared to some extent, silver filagree work is produced, and there are manufactures of common articles of iron and brass, coarse black pottery, &c. A small foreign trade used to be carried on through Massowa, on the Red Sea (now in the hands of the Italians), the principal exports being hides, coffee, honey, wax, gum, ivory, &c., the imports textile fabrics, fire-arms, tobacco, &c.

The Abyssinians were converted to Christianity in the fourth century, by some missionaries from Alexandria. In the sixth century the power of the sovereigns of their kingdom, which was generally known as Ethiopia, had attained its height; but before another had expired the Arabs had invaded the country, and obtained a footing. For several centuries subsequently the kingdom continued in a distracted state, being now torn by internal commotions and now invaded by external enemies (Mohammedans and Gallas). To protect himself from the last the Emperor of Abyssinia applied, about the middle of the sixteenth century, to the King of Portugal for assistance, promising, at the same time, implicit submission to the pope. The solicited aid was sent, and the empire saved. The Roman Catholic priests endeavoured to induce the emperor and his family to renounce the tenets and rites of the Coptic Church, and to adopt those of Rome. This attempt, however, was resisted by the ecclesiastics and the people, and ended, after a long struggle, in the expulsion of the Catholic priests about 1630. The kingdom gradually fell into a state of anarchy, and was broken up into several independent states. An attempt to revive the power of the ancient kingdom of Ethiopia was commenced about the middle of the present century by King Theodore. He introduced European artisans, and went to work wisely in many ways, but his cruelty and tyranny counteracted his politic measures. In consequence of a slight, real or fancied, which he had received at the hands of the British government, he threw Consul Cameron and a number of other British subjects into prison, in 1863, and refused to give them up. To effect their



Abyssinian Chief and Soldiers.

release an army of nearly 12,000 men, under Sir Robert (afterwards Lord) Napier, was despatched from Bombay in 1867. The force landed at Zoulla on the Red Sea, and marching up the country came within sight of the hill-fortress of Magdala in April, 1868. After being defeated in a battle Theodore delivered up the captives and shut himself up in Magdala, which was taken by storm on the 13th April, Theodore being found among the slain. After the withdrawal of the British fighting immediately

began among the chiefs of the different provinces, but at last the country was divided between Kasa, who secured the northern and larger portion (Tigré and Amhara) and assumed the name of King Johannes, and Menelek, who gained possession of Shoa. Latterly Johannes made himself supreme, and in 1881 assumed the title of emperor

(*negus negest*—king of kings), having under him the Kings of Shoa and Go'am. Debra Tabor, about 30 miles east of Lake Dembea, is his chief residence, though Gondar is often regarded as the capital. Advantage was taken of the troubles in Abyssinia by the Egyptians in the north and the Gallas in the south to acquire additional territory at its expense. Egypt annexed the region round Massowa, Abyssinia having been thus shut out from the sea. Hostilities have been repeatedly carried on between Johannes and the Egyptians on this account, as well as more recently with the Italians. Johannes was succeeded in 1889 by Menelek II., and an Italian protectorate, since annulled, was formed. The Italians were (1897) ejected the country. Population 5,000,000.

Aca'cia, a genus of plants, nat. order Leguminosæ, sub-order Mimosæ, consisting of trees or shrubs with compound pinnate

ACADEMY.

leaves and small leaflets, growing in Africa, Arabia, the East Indies, Australia, &c. The flowers, usually small, are arranged in spikes or globular heads at the axils of the leaves near the extremity of the branches. The corolla is bell or funnel shaped; stamens



Acacia (Acacia seyal).

are numerous; the fruit is a dry unjointed pod. Several of the species yield gum-arabic and other gums; some have astringent barks and pods, used in tanning. *A. Catechu*, an Indian species, yields the valuable astringent called catechu; *A. dealbata*, the wattle-tree of Australia, from 15 to 30 feet in height, is the most beautiful and useful of the species found there. Its bark contains a large percentage of tannin, and is hence exported. Some species yield valuable timber; some are cultivated for the beauty of their flowers.

Acad'emy, an association for the promotion of literature, science, or art; established sometimes by government, sometimes by the voluntary union of private individuals. The name Academy was first applied to the philosophical school of Plato, from the place where he used to teach, a grove or garden at Athens which was said to have belonged originally to the hero Acadēmus. Academies devote themselves either to the cultivation of science generally or to the promotion of

a particular branch of study, as antiquities, language, and the fine arts. The most celebrated institutions bearing the name of academies, and designed for the encouragement of science, antiquities, and language respectively, are the French Académie des Sciences (founded by Colbert in 1666), Académie des Inscriptions (founded by Colbert in 1663), and Académie Française (founded by Richelieu in 1635), all of which are now merged in the National Institute. The oldest of the academies instituted for the improvement of language is the Italian Accademia della Crusca (now the Florentine Academy), formed in 1582, and chiefly celebrated for the compilation of an excellent dictionary of the Italian language, and for the publication of several carefully prepared editions of ancient Italian poets. In Britain the name of academy, in the more dignified sense of the term, is confined almost exclusively to certain institutions for the promotion of the fine arts, such as the Royal Academy of Arts and the Royal Scottish Academy. The Royal Academy of Arts (usually called simply the Royal Academy) was founded in London in 1768, 'for the purpose of cultivating and improving the arts of painting, sculpture, and architecture.' The Royal Scottish Academy of Painting, Sculpture, and Architecture was founded in 1826 and incorporated in 1838. It consists of thirty academicians and twenty associates. The Royal Hibernian Academy at Dublin was incorporated in 1823, and reorganized in 1861. It consists of thirty members and ten associates. The American Philosophical Society, the oldest scientific institution in America, was organized in 1744, in Philadelphia. The Academy of Natural Sciences of Philadelphia was organized in 1812. The American Academy of Arts and Sciences, incorporated in 1780, is located at Boston, as also the Society of Natural History. The Connecticut Academy of Arts and Sciences was organized at New Haven in 1799. The New York Academy of Sciences was incorporated as the Lyceum of Natural History in 1818. The Peabody Academy of Sciences, Salem, Mass., was endowed by George Peabody in 1867. The Smithsonian Institution, Washington, D. C., founded by James Smithson, an English scientist, incorporated by Congress in 1846. Its publications have given it prominent standing among scientists. In the great West there are active Academies in Cincinnati, St.

Louis, Chicago, Davenport, San Francisco, Cal., and New Orleans.

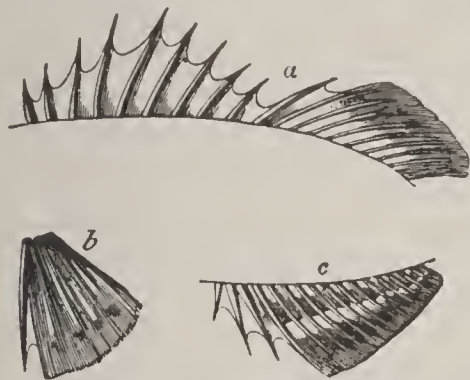
Academy, THE, a London weekly review of literature, science, and art, established (as a monthly periodical) in 1869. Its articles are signed by the writers. Its founder and first editor was Dr. C. E. Appleton (born, 1841; died, 1879).

Aca'dia (French *Acadie*), the name formerly given to Nova Scotia. It received its first colonists from France in 1604, being then a possession of that country, but it passed to Britain, by the Peace of Utrecht, in 1713. In 1756, 18,000 of the French inhabitants were forcibly removed from their homes on account of their hostility to the British, an incident on which is based Longfellow's *Evangeline*.

Acale'pha (Gr. *akalēphē*, a nettle, from their stinging properties), a term formerly used to denote the Medusæ or jelly-fishes and their allies.

Acantha'ceæ, or **ACANTHADS**, a natural order of dicotyledonous herbaceous plants or shrubs, with opposite leaves and monopetalous corolla, mostly tropical; species about 1400. See *Acanthus*.

Acanthop'teri, **ACANTHOPTERYGII** (Gr.



a, b, c, Spines of the dorsal, anal, and ventral fins of Acanthopterygii.

akantha, a spine, *pterygion*, a fin), a group of fishes, distinguished by the fact that at least the first rays in each fin exist in the form of stiff spines; it includes the perch, mullet, mackerel, gurnard, wrasse, &c.



Acanthus of Corinthian Capital.

Acan'thus, a genus of herbaceous plants or shrubs, order Acanthaceæ, mostly tropi-

cal, two species of which, *A. mollis* and *A. spinosus* (the bear's-breech or brankursine), are characterized by large white flowers and deeply indented shining leaves. They are favourite ornamental plants in British gardens.—In architecture the name is given to a kind of foliage decoration said to have been suggested by this plant, and much employed in Roman and later styles.

Acapul'co, a seaport of Mexico, on the Pacific, with a capacious, well-sheltered harbour; a coaling station for steamers, but with no great trade. Pop. 5000.

Acar'ida, a division of the Arachnida, including the mites, ticks, and water-mites. See *Mite*.

Acarna'nia, the most westerly portion of Northern Greece, together with *Atolia* now forming a nomarchy with a pop. of 138,444. The Acarnanians of ancient times were behind the other Greeks in civilization, living by robbery and piracy.

Ac'arus, the genus to which the mite belongs.

Acca'dians, the primitive inhabitants of Babylonia, who had descended from the mountainous region of Elam on the east, and to whom the Assyrians ascribed the origin of Chaldean civilization and writing. This race is believed to have belonged to the Turanian family, or to have been at any rate non-Semitic. What is known of them has been learned from the cuneiform inscriptions.

Accelera'tion, the increase of velocity which a body acquires when continually acted upon by a force in the direction of its motion. A body falling from a height is one of the most common instances of acceleration.—**ACCELERATION OF THE MOON**, the increase of the moon's mean angular velocity about the earth, the moon now moving rather faster than in ancient times. This phenomenon has not been fully explained, but it is known to be partly owing to the slow process of diminution which the eccentricity of the earth's orbit is undergoing, and from which there results a slight diminution of the sun's influence on the moon's motions.—**DIURNAL ACCELERATION OF THE FIXED STARS**, the apparent greater diurnal motion of the stars than of the sun, arising from the fact that the sun's apparent yearly motion takes place in a direction contrary to that of his apparent daily motion. The stars thus seem each day to anticipate the sun by nearly 3 minutes 56 seconds of mean time.

Ac'cent, a term used in several senses. In English it commonly denotes superior stress or force of voice upon certain syllables of words, which distinguishes them from the other syllables. Many English words, as *as'pi-ra'tion*, have two accents, a secondary and primary, the latter being the fuller or stronger. Some words, as *in-com'pre-hen'si-bil'i-ty*, have two secondary or subordinate accents. When the full accent falls on a vowel, that vowel has its long sound, as in *vo'cal*; but when it falls on a consonant, the preceding vowel is short, as in *hab'it*. This kind of accent alone regulates English verse as contrasted with Latin or Greek verse, in which the metre depended on *quantity* or length of syllables. In books on elocution three marks or accents are generally made use of, the first or *acute* (/) showing when the voice is to be raised, the second or *grave* (\), when it is to be depressed, and the third or *circumflex* (^) when the vowel is to be uttered with an undulating sound. In some languages there is no such distinct accent as in English (or German), and this seems to be now the case with French.—In music, accent is the stress or emphasis laid upon certain notes of a bar. The first note of a bar has the strongest accent, but weaker accents are given to the first notes of subordinate parts of the bars, as to the third, fifth, and seventh in a bar of eight quavers.

Accen'tor (*Accentor modulāris*), or HEDGE ACCENTOR, genus of seed and insect-eating passerine birds. See *Hedge-warbler*.

Accep'tance, in law, the act by which a person binds himself to pay a bill of exchange drawn upon him. (See *Bill*.) No acceptance is valid unless made in writing on the bill, but an acceptance may be either absolute or conditional, that is, stipulating some alteration in the amount or date of payment, or some condition to be fulfilled previous to payment.

Ac'cessary, or AC'CESSORY, in law, a person guilty of an offence by connivance or participation, either before or after the act committed, as by command, advice, concealment, &c. An accessory *before the fact* is one who procures or counsels another to commit a crime, and is not present at its commission; an accessory *after the fact* is one who, knowing a felony to have been committed, gives assistance of any kind to the felon so as to hinder him from being apprehended, tried, or suffering punishment. An accessory before the fact may be tried

and punished in all respects as if he were the principal. In high treason, all who participate are regarded as principals.

Acciden'tals, notes introduced in the course of a piece of music in a different key from that in which the passage they occur is principally written. They are represented by the sign of a sharp, flat, or natural immediately before the note which is to be raised or lowered.

Accipitres (ak-sip'i-trēz), the name given by Linnæus and Cuvier to the rapacious birds now usually called *Raptores* (which see).

Acclimatiza'tion, the process of accustoming plants or animals to live and propagate in a climate different from that to which they are indigenous, or the change which the constitution of an animal or plant undergoes under new climatic conditions, in the direction of adaptation to those conditions. The systematic study of acclimatization has only been entered upon in very recent times, and the little progress that has been made in it has been more in the direction of formulating anticipative, if not arbitrary hypotheses, than of actual discovery and acquisition of facts. The term is sometimes applied to the case of animals or plants taking readily to a new country with a climate and other circumstances similar to what they have left, such as European animals and plants in America and New Zealand: but this is more properly *naturalization* than acclimatization.

Accolade (ak o-lād'; French, from *L ad*, to, *collum*, the neck), the ceremony used in conferring knighthood, anciently consisting either in the embrace given by the person who conferred the honour of knighthood or in a light blow on the neck or the cheek, latterly consisting in the ceremony of striking the candidate with a naked sword.

Accol'ti, BENEDETTO, an Italian lawyer, born at Arezzo in Tuscany in 1415, died 1466. He was secretary to the Florentine republic, 1459, and author of a work on the Crusades which is said to have furnished Tasso with matter for his *Jerusalem Delivered*.

Accommoda'tion Bill, a bill of exchange drawn and accepted to raise money on, and not given, like a genuine bill of exchange, in payment of a debt, but merely intended to accommodate the drawer: colloquially called a *wind bill* and a *kite*.

Accommoda'tion Ladder, a light ladder hung over the side of a ship at the gangway

to facilitate ascending from, or descending to, boats.

Accom'paniment, in music, is that part of music which serves for the support of the principal melody (solo or obligato part). This can be executed either by many instruments, by a few, or by a single one.

Accor'dion, a keyed musical wind-instrument similar to the concertina, being in the form of a small box, containing a number of metallic reeds fixed at one of their extremities, the sides of the box forming a folding apparatus which acts as a bellows to supply the wind, and thus set the reeds in vibration, and produce the notes both of melody and harmony.

Ac'crah, a British settlement in Africa, in a swampy situation, on the Gold Coast, about 75 miles east of Cape Coast Castle. Exports gold-dust, ivory, gums, palm-oil; imports cottons, cutlery, firearms, &c.

Ac'crington, a municipal bor. of England, Lancashire, 5 miles east of Blackburn, with large cotton factories, print-works, and bleach-fields, and coal-mines adjacent. Pop. 38,603. Also a parl. div. of the county.

Accu'mulator, a name applied to a kind of electric battery by means of which electric energy can be stored and rendered portable. In the usual form each battery forms a cylindrical leaden vessel, containing alternate sheets of metallic lead and minium wrapped in felt and rolled into a spiral wetted with acidulated water. On being charged with electricity the energy may be preserved till required for use.

Accu'sative Case, in Latin and some other languages, the term applied to the case which designates the object to which the action of any verb is immediately directed, corresponding, generally speaking, to the *objective* in English.

Aceph'ala, in zoology, the headless Mollusca or those which want a distinct head, corresponding to those that have bivalve shells and are also called *Lumellibranchiata*.

A'cer, the genus of plants (natural order *Aceraceæ*) to which belong the maples.

Acerra (â-cher'â), a town in South Italy, 9 miles north-east of Naples, the see of a bishop, in a fertile but unhealthy region. Pop. 15,165.

Acetab'ulum, an anatomical term applied to any cup-like cavity, as that of a bone to receive the protuberant end of another bone, the cavity, for instance, that receives the end of the thigh-bone.

Acetates (as'e-tâts), salts of acetic acid.

The acetates of most commercial or manufacturing importance are those of aluminium and iron, which are used in calico-printing; of copper, which as verdigris is used as a colour; and of lead, best known as sugar of lead. The acetates of potassium, sodium, and ammonium, of iron, zinc, and lead, and the acetate of morphia, are employed in medicine.

Acet'ic Acid, an acid produced by the oxidation of common alcohol, and of many other organic substances. Pure acetic acid has a very sour taste and pungent smell, burns the skin, and is poisonous. From freezing at ordinary temperatures (58° or 59°) it is known as *glacial acetic acid*. Vinegar is simply dilute acetic acid, and is prepared by subjecting wine or weak spirit to the action of the air; also from malt which has undergone vinous fermentation. Acetic acid, both concentrated and dilute, is largely used in the arts, in medicine, and for domestic purposes. See *Vinegar*.

Acet'ic Ethers, compounds consisting of acetates of alcohol radicals. Common acetic ether is a colourless, volatile fluid, and is a flavouring constituent in many wines. It is made artificially by distilling a mixture of alcohol, oil of vitriol, and acetate of potash.

Acetylene gas is formed by casting the carbide of calcium, magnesium, potassium or other metal into water. The gas evolved is a brilliant illuminant. It is used in lamps for bicycles and also in projecting lanterns, as the vitascope.

Achæans (a-kē'anz), one of the four races into which the ancient Greeks were divided. In early times they inhabited a part of Northern Greece and of the Peloponnesus. They are represented by Homer as a brave and warlike people.

A confederacy or league existed among the twelve towns of this region. After the death of Alexander the Great it was broken up, but was revived again, B.C. 280, and from this time grew in power till it spread over the whole Peloponnesus. It was finally dissolved by the Romans, B.C. 147, and after this the whole of Greece, except Thessaly, was called Achaia or Achæa. Achaia with Elis now forms a nomarchy of the kingdom of Greece. Pop. 1889, 210,713.

Achæmenidæ (ak-ē-men'i-dē), a dynasty of ancient Persian kings, being that to which the great Cyrus belonged.

Achaia (a-kā'ya). See *Achæans*.

Achalzich (â-hâl'tsēh), a fortified town

of Russia, in Transcaucasia, 70 miles east of the Black Sea. Pop. 18,000.

Achard (ăh'ärt), FRANZ KARL, a German chemist, born 1753, died 1821, principally known by his invention (1789-1800) of a process for manufacturing sugar from beet-root.

Achard (ă-shür), LOUIS AMÉDÉE EUGÈNE, born 1814, died 1875, French journalist, novelist, and playwright. Best known as a novelist; wrote the novels *Belle Rose*, *La Chasse royale*, *Châteaux en Espagne*, *Robe de Nessus*, *Chaînes de fer*, &c.

Achates (a-kā'tēz), a companion of Æneas in his wanderings subsequent to his flight from Troy. He is always distinguished in Virgil's *Æneid* by the epithet *fidus*, 'faithful,' and has become typical of a faithful friend and companion.

Acheen or **ATCHIN** (ă-chēn'), a native state of Sumatra, with capital of same name, in the north-western extremity of the island, now nominally under Dutch administration. Though largely mountainous, it has also undulating tracts and low fertile plains. By treaty with Britain the Dutch were prevented from extending their territory in Sumatra by conquest; but this obstacle being removed, in 1871 they proceeded to occupy Acheen. It was not till 1879, however, after a great waste of blood and treasure, that they obtained a general recognition of their authority. But they have not been able to establish it firmly, and in 1885 were forced to evacuate part of the Acheenese territory, with considerable loss in men and guns. In the seventeenth century Acheen was a powerful state, and carried on hostilities successfully against the Portuguese, but its influence decreased with the increase of the Dutch power. The principal exports are rice and pepper. Area, 19,000 sq. miles; population, 600,000.

Achelous (ak-e-lō'us), now *Aspropotāmo*, the largest river of Greece, rising on Mount Pindus, separating Ætolia and Acarnania, and falling into the Ionian Sea. Achelōus was the river-god of Greece.

Achenbach (ă'hen-bäch), ANDREAS, is a distinguished and prolific German landscape and marine painter, born in 1815.—OSWALD ACHENBACH, born 1827, brother of above, is also a distinguished landscape painter. Both are of the Düsseldorf school.

Achene, **ACHENIUM** (a-kēn', a-kē'ni-um), in botany, a small, dry carpel containing a single seed, the pericarp of which is closely applied but separable, and which does not open

when ripe. It is either solitary, or several achenia may be placed on a common receptacle as in the buttercup.

Acheron (ak'e-ron), the ancient name of several rivers in Greece and Italy, all of which were connected by legend with the lower world. The principal was a river in

Epirus, which passes through Lake Acherusia and flows into the Ionian Sea. Homer speaks of Acheron as a river of the lower world, and late Greek writers use the name to designate the lower world.

Ach'iar, **ATCH'AR**, an Indian condiment made of the young shoots of the bamboo pickled.

Achievement (a-chēv'ment), in heraldry, a term which may be applied to the shield of armorial bearings generally, but is usually applied to the shield or hatchment which is affixed to the house of persons lately deceased, to denote their rank and station.

Achill (ak'il), or **EAGLE ISLAND**, the largest island on the Irish coast; separated from the mainland of Connaught by a narrow sound; area, 51,521 acres, mostly ir reclaimable bog. The chief occupation of the natives is fishing. Pop. 4719.

Achillæ'a, the milfoil genus of plants.

Achilles (a-kil'ēz), a Greek legendary hero, the chief character in Homer's *Iliad*. His father was Peleus, ruler of Phthia in Thessaly, his mother the sea-goddess Thetis. When only six years of age he was able to overcome lions and bears. His guardian, Cheiron the Centaur, having declared that Troy could not be taken without his aid, his mother, fearing for his safety, disguised him as a girl, and introduced him among the daughters of Lycomedes of Scyros. Her desire for his safety made her also try to make him invulnerable when a child by anointing him with ambrosia, and again by dipping him in the river Styx, from which he came out proof against wounds, all but the heel, by which she held him. His place of concealment was discovered by Odysseus (Ulysses), and he promised his assistance to the Greeks against Troy. Accompanied by his close friend, Patroclus, he joined the expedition with a body of followers (Myrmidons) in fifty ships, and occupied nine years in raids upon the towns neighbouring to Troy, after which the siege proper commenced. On being deprived of his prize, the maiden Briseis, by Agamemnon, he refused



Achene—Lettuce and Ranunculus.

to take any further part in the war, and disaster attended the Greeks. Patroclus now persuaded Achilles to allow him to lead the Myrmidons to battle dressed in his armour, and he having been slain by Hector, Achilles vowed revenge on the Trojans, and forgot his anger against the Greeks. He attacked the Trojans and drove them back to their walls, slaying them in great numbers, chased Hector, who fled before him three times round the walls of Troy, slew him, and dragged his body at his chariot-wheels, but afterwards gave it up to Priam, who came in person to beg for it. He then performed the funeral rites of Patroclus, with which the Iliad closes. He was killed in a battle at the Scæan Gate of Troy by an arrow from the bow of Paris which struck his vulnerable heel. In discussions on the origin of the Homeric poems the term *Achilleid* is often applied to those books (i. viii. and xi.-xxii.) of the Iliad in which Achilles is prominent, and which some suppose to have formed the original nucleus of the poem.

Achilles' Tendon, TENDON OF ACHILLES, the strong tendon which connects the muscles of the calf with the heel, and may be easily felt with the hand. The origin of name will be understood from above article.

Achilles Tattius (a-kil'ēz tā'shi-us), a Greek romance writer of the fifth century A.D., belonging to Alexandria; wrote a love story called Leucippē and Cleitophon.

Achimenes (a-kim'e-nēz), a genus of tropical American plants, with scaly underground tubers, nat. order Gesneraceæ, now cultivated in European green-houses on account of their ornamental character.

Achlamydeous (ak-la-mid'i-us), in botany, wanting the floral envelopes, that is, having neither calyx nor corolla, as the willow.

Achor (ā'kor), a disease of infants, in which the head, the face, and often the neck and breast become incrustated with thin, yellowish or greenish scabs, arising from minute, whitish pustules, which discharge a viscid fluid.

Achromat'ic (Gr. *a*, priv., and *chrōma*, *chrōmatos*, colour), in optics, transmitting colourless light, that is, not decomposed into the primary colours, though having passed through a refracting medium. A single convex lens does not give an image free from the prismatic colours, because the rays of different colour making up white light are not equally refrangible, and thus do not all come to a focus together, the

violet, for instance, being nearest the lens, the red farthest off. If such a lens of crown-glass, however, is combined with a concave lens of flint-glass—the curvatures of both being properly adjusted—as the two materials have somewhat different optical properties, the latter will neutralize the chromatic aberration of the former, and a satisfactory image will be produced. Telescopes, microscopes, &c., in which the glasses are thus composed are called *achromatic*.

Acid (Latin, *acidus*, sour), a name popularly applied to a number of compounds, solid, liquid, and gaseous, having more or less the qualities of vinegar (itself a diluted form of acetic acid), the general properties assigned to them being a tart, sour taste, the power of changing vegetable blues into reds, of decomposing chalk and marble with effervescence, and of being in various degrees neutralized by alkalies. An acid has been defined as a substance containing hydrogen, which hydrogen is in whole or in part replaceable by a metal when the metal is presented in the form of a hydrate; being *monobasic*, *dibasic*, or *tribasic*, according to the number of hydrogen atoms replaced.

Acierage (ā'sē-ēr-āj), (Fr. *acier*, steel), a process by which an engraved copper-plate or an electrotype from an engraved plate of steel or copper has a film of iron deposited over its surface by electricity in order to protect the engraving from wear in printing. By this means an electrotype of a fine engraving, which, if printed directly from the copper, would not yield 500 good impressions, can be made to yield 3000 or more; and when the film of iron becomes so worn as to reveal any part of the copper, it may be removed and a fresh coating deposited so that 20,000 good impressions may be got.

Acipenser (as-i-pen'sēr), the genus of cartilaginous ganoid fishes to which the sturgeon belongs.

Acì Reale (ä'chē rā-ä'lā), a seaport of Sicily, north-east of Catania, a well-built town, with a trade in corn, wine, fruit, &c. Pop. 22,431.

A'cis, according to Ovid, a beautiful shepherd of Sicily, loved by Galatea, and crushed to death by his rival the Cyclops Polyphemus. His blood, flowing from beneath the rock which crushed him, was changed into a river bearing his name.

Aclin'ic Line (Gr. priv. *a*, *klinō*, to incline), the magnetic equator, an irregular curve in the neighbourhood of the terres-

trial equator, where the magnetic needle balances itself horizontally, having no dip.

Acne (ak'nē), a skin disease, consisting of small hard pimples, usually on the face, caused by congestion of the follicles of the skin.

Acolytes (ak'o-lits), in the ancient Latin and Greek Churches, persons of ecclesiastical rank next in order below the subdeacons, whose office it was to attend to the officiating priest. The name is still retained in the Anglican and Roman Churches.

Aconcagua (ä-kon-kä'gwä), a province, a river, and a mountain of Chili. The peak of Aconcagua, rising to the height of 22,420 feet (according to a recent estimate, 22,860), is one of the highest summits of the western hemisphere. Area of prov., 5840 sq. miles. Pop. 1891, 153,049. Capital, San Felipe.

Ac'onite (*Aconitum*), a genus of hardy herbaceous plants, nat. order Ranunculaceæ, represented by the well-known wolf's-bane or monk's-hood, and remarkable for their poisonous properties and medicinal qualities, being used internally as well as externally in rheumatism, gout, neuralgia, &c. See next article.

Acon'itine, an alkaloid extracted from monk's-hood and some other species of aconite; used medicinally, though a virulent poison.

Aconquija (ä-kon-kē'hä), a range of mountains in the Argentine Republic; the name also of a single peak, 17,000 feet high.

Ac'orn, the fruit of the different kinds of oak. The acorn-cups of one species are brought from the Levant under the name of *valonia*, and used in tanning.

Acorn-shell. See *Balanus*.

Ac'orus, a genus of plants, including the sweet-flag. See *Sweet-flag* and *Calamus*.

Acos'ta, GABRIEL, afterwards URIEL, a Portuguese of Jewish descent, born 1590, died by his own hand 1647. Brought up a Christian, he afterwards embraced Judaism. Having gone to Amsterdam, where he attacked the practices of the Jews, and denied the divine mission of Moses, he suffered much persecution at the hands of the Jews. He left an autobiography, published in 1687, under the title *Exemplar Vitæ Humanæ*.

Acotyle'dons, plants not furnished with cotyledons or seed-lobes. They include ferns, mosses, sea-weeds, &c., and are also called flowerless plants or cryptogams.

Acoustics (a-kou'stiks), the science of sound. It teaches the cause, nature, and phenomena of such vibrations of elastic

bodies as affect the organ of hearing; the manner in which sound is produced, its transmission through air and other media, the doctrine of reflected sound or echoes, the properties and effects of different sounds, including musical sounds or notes, and the structure and action of the organ of hearing, &c. The propagation of sound is analogous to that of light, both being due to vibrations which produce successive waves, and Newton was the first to show that its propagation through any medium depended upon the elasticity of that medium. Regarding the intensity, reflection, and refraction of sound, much the same rules apply as in light. In ordinary cases of hearing the vibrating medium is air, but all substances capable of vibrating may be employed to propagate and convey sound. When a bell is struck its vibrations are communicated to the particles of air surrounding it, and from these to particles outside them, until they reach the ear of the listener. The intensity of sound varies inversely as the square of the distance of the body sounding from the ear. Sound travels through the air at the rate of about 1090 feet per second; through water at the rate of about 4700 feet. Sounds may be musical or non-musical. A musical sound is caused by a regular series of exactly similar pulses succeeding each other at precisely equal intervals of time. If these conditions are not fulfilled the sound is a noise. Musical sounds are comparatively simple, and are combined to give pleasing sensations according to easy numerical relations. The *loudness* of a note depends on the *degree* to which it affects the ear; the *pitch* of a note depends on the *number* of vibrations to the second which produce the note; the *timbre*, *quality*, or *character* of a note depends on the *body* or *bodies* whose vibrations produce the sound, and is due to the form of the paths of vibrating particles. The gamut is a series of eight notes, which are called by the names Do, Re, Mi, Fa, Sol, La, Si, Do₂, and the numbers of vibrations which produce these notes are respectively proportional to 24, 27, 30, 32, 36, 40, 45, 48. The numerical value of the interval between any two notes is given by dividing one of the above numbers corresponding to the higher note by the number corresponding to the lower note. The intervals from Do to each of the others are called a *second*, a *major third*, a *fourth*, a *fifth*, a *sixth*, a *seventh*, and an *octave* respectively. The interval from La to Do₂ is a *minor third*. An interval of $\frac{9}{8}$ is a *major*

tone; $\frac{1}{9}$ is a *minor tone*; $\frac{1}{16}$ is called a *limma*. The properties of sound were mathematically investigated by Bacon and Galileo, but it remained for Newton, Lagrange, Euler, Laplace, Helmholtz, &c., to bring the science to its present state.

Acqui (äk'wē), a town of Northern Italy, 18 miles s.s.w. of Alessandria, a bishop's see. It has warm sulphurous baths, which were known to the Romans, and which yet draw a great many visitors. Pop. 6481.

Acre, a standard British measure of land, also used in the colonies and the United States. The imperial statute acre consists of 4840 square yards, divided into 4 roods. The old Scotch acre contains 6146·8 square yards, the old Irish acre 7840 square yards.

Acre (ā'kēr) (ancient *Accho* and *Ptolemais*), a seaport of Syria, in Northern Palestine, on the Bay of Acre, early a place of great strength and importance. Taken from the Saracens under Saladin in 1191 by Richard I. of England and Philip of France; bravely defended by the Turks assisted by Sir Sidney Smith in 1799 against Napoleon; in 1832, taken by Ibrahim Pasha; in 1840, bombarded by a British, Austrian, and Turkish fleet, and restored to the Sultan of Turkey. Pop. 5000.

Acri (ä'krē), a town of S. Italy, prov. of Cosenza. Pop. 10,000.

Ac'rita (Gr. *akritos*, undistinguishable, doubtful), a name sometimes given to the animals otherwise called Protozoa.

Acroceph'ali, tribes of men distinguished by pyramidal or high skulls.

Acrocerau'nia, now *Cape Glossa* or *Linguetta*, a promontory of Western Greece, in Epirus, running into the Adriatic.

Acrocorin'thus, a steep rock in Greece, nearly 1900 feet high, overhanging ancient Corinth, and on which stood the acropolis or citadel, the sacred fountain of Pirēnē being also here. This natural fortress has proved itself of importance in the modern history of Greece.

Ac'rogens (-jenz), lit. summit-growers, a term applied to the ferns, mosses, and lichens (cryptogams), as growing by extension upwards, in contradistinction to endogens and exogens.

Ac'rolith, an early form of Greek statuary in which the head, hands, and feet only were of stone, the trunk of the figure being of wood draped or gilded.

Acrop'olis (Gr. *akros*, high, and *polis*, a city), the citadel or chief place of a Grecian city, usually on an eminence com-

manding the town. That of Athens contained some of the finest buildings in the world, such as the Parthenon, Erechthēum, &c.

Acros'tic, a poem of which the first or last, or certain other letters of the line, taken in order, form some name, motto, or sentence. A poem of which both first and last letters are thus arranged is called a double acrostic. In Hebrew poetry, the term is given to a poem, of which the initial letters of the lines or stanzas, were made to run over the letters of the alphabet in their order, as in Psalm cxix.—Acrostics have been much used in complimentary verses, the initial letters giving the name of the person eulogized.

Act, in special senses: (1) In dramatic poetry, one of the principal divisions of a drama, in which a definite and coherent portion of the plot is represented; generally subdivided into smaller portions called *scenes*. The Greek dramas were not divided into acts. The dictum that a drama should consist of five acts was first formally laid down by Horace, and is generally adhered to by modern dramatists in tragedy. In comedy no such distinction is observed.—(2) Something formally done by a legislative or judicial body; a statute or law passed.—(3) In universities, a thesis maintained in public by a candidate for a degree. See *Act of God*, *of Parliament*, *of Settlement*, &c.

Acta Diur'na (L., proceedings of the day), a daily Roman newspaper which appeared under both the republic and the empire.

Actæ'a. See *Baneberry*.

Actæ'on, in Greek mythology, a great hunter, turned into a stag by Artēnis (Diana) for looking on her when she was bathing, and torn to pieces by his own dogs.

Acta Erudito'rum (L., acts of the learned), the first literary journal that appeared in Germany (1682–1782). Among the contributors, the most distinguished was Leibnitz.

Acta Sanctorum (L., acts of the saints), a name applied to all collections of accounts of ancient martyrs and saints, both of the Greek and Roman Churches, more particularly to the valuable collection begun by John Bolland, a Jesuit of Antwerp in 1643, and which, being continued by other divines of the same order (*Bollandists*), now extends to sixty volumes, the lives following each other in the order of the calendar.

Actin'ia, the genus of animals to which the typical sea-anemones belong. See *Sea-anemone*.

Ac'tinism, the property of those rays of light which produce chemical changes, as in photography, in contradistinction to the light rays and heat rays. The actinic property or force begins among the green rays, is strongest in the violet rays, and extends a long way beyond the visible spectrum.

Actin'olite, a mineral nearly allied to hornblende.

Actinom'eter, an instrument for measuring the intensity of the sun's actinic rays. See *Actinism*.

Action, the mode of seeking redress at law for any wrong, injury, or deprivation. Actions are divided into civil and criminal, the former again being divided into real, personal, and mixed. No suit can be brought, except in rare special cases, by a citizen against the U. States. Relief must be sought in the Court of Claims, or by petition. By modern statutes many old forms of action have been abandoned.

Ac'tium, a promontory on the western coast of Northern Greece, not far from the entrance of the Ambracian Gulf (Gulf of Arta), now called La Punta, memorable on account of the naval victory gained here by Octavianus (afterwards the Emperor Augustus) over Antony and Cleopatra, September 2, B.C. 31, in sight of their armies, encamped on the opposite shores of the Ambracian Gulf. Soon after the beginning of the battle Cleopatra fled with sixty Egyptian ships, and Antony basely followed her, and fled with her to Egypt. The deserted fleet was not overcome without making a brave resistance. Antony's land forces soon went over to the enemy, and the Roman world fell to Octavius.

Act of God, a legal term defined as 'a direct, violent, sudden, and irresistible act of nature, which could not, by any reasonable cause, have been foreseen or resisted.' No one can be legally called upon to make good loss so arising.

Act of Parliament, a law or statute proceeding from the parliament of the United Kingdom passed in both houses, and having received the royal assent. Before it is passed it is a *bill* and not an act. Acts are either public or private, the former affecting the whole community, the latter only special persons and private concerns. The whole body of public acts constitutes the *statute law*. An act of parliament can only be altered or repealed by the authority of parliament. Acts are usually cited in this way, '13 and 14 Vict. c. (or chap.) 21,' which

means the 21st act in succession passed in year 13th-14th of the queen's reign (that is, 1850). Short titles, such as 'the Merchant Shipping Act, 1854,' are also used. Up to the time of Edward I. acts of parliament were in Latin; then French was introduced, and for some time was exclusively employed. It was not till Henry VII. that all acts were in English.

Act of Settlement, an act passed by the English parliament in 1700, by which the succession to the throne of the three kingdoms, in the event of King William and Queen Anne dying without issue, was settled on the Princess Sophia, electress of Hanover, and the heirs of her body being Protestants. The Princess Sophia was the youngest daughter of Elizabeth, queen of Bohemia, daughter of James I. By this act George I., son of the Princess Sophia, succeeded to the crown on the death of Queen Anne.—Another act of settlement was, that by which, under Cromwell's government, a new allotment was made of almost all landed property in Ireland, in 1652.

Act of Toleration, an act of parliament passed in 1689, by which Protestant dissenters from the Church of England, on condition of their taking the oaths of supremacy and allegiance, and repudiating the doctrine of transubstantiation, were relieved from the restrictions under which they had formerly lain with regard to the exercise of their religion according to their own forms.

Act of Uniformity, an English act passed in 1662, enjoining upon all ministers to use the Book of Common Prayer on pain of forfeiture of their livings. See *Nonconformists*.

Acton, a kind of padded or quilted vest or tunic formerly worn under a coat of mail to save the body from bruises, or used by itself as a defensive garment. Jackets of leather or other material plated with mail were also so called. *Gambeson* was an equivalent term.

Acton, a name of various places in England, one of them a western suburb of London, with a pop. 1891, of 24,207.

Actor, one who represents some part or



Quilted Acton of the fifteenth century.

character on the stage. Actresses were unknown to the Greeks and Romans in the earliest times, men or boys always performing the female parts. They appeared under the Roman empire, however. Charles II. first encouraged the public appearance of actresses in England; in Shakspeare's time there were none. See *Drama*.

Acts of the Apostles, one of the books of the New Testament, written in Greek by St. Luke, probably in A.D. 63 or 64. It embraces a period of about thirty years, beginning immediately after the resurrection, and extending to the second year of the imprisonment of St. Paul in Rome. Very little information is given regarding any of the apostles, excepting St. Peter and St. Paul, and the accounts of them are far from being complete. It describes the gathering of the infant church; the fulfilment of the promise of Christ to his apostles in the descent of the Holy Ghost; the choice of Matthias in the place of Judas, the betrayer; the testimony of the apostles to the resurrection of Jesus in their discourses; their preaching in Jerusalem and in Judea, and afterwards to the Gentiles; the conversion of Paul, his preaching in Asia Minor, Greece, and Italy, his miracles and labours.

Act'uary, an accountant whose business is to make the necessary computations in regard to a basis for life assurance, annuities, reversions, &c.

Acu'leus, in botany, a prickle, or sharp-pointed process of the epidermis, as distinguished from a thorn or spine, which is of a woody nature.

Acupress'ure, a means of arresting bleeding from a cut artery introduced by Sir James Simpson in 1859, and consisting in compressing the artery above the orifice, that is, on the side nearest the heart, with the middle of a needle (*L. acus*, a needle) introduced through the tissues.

Acupunc'ture, a surgical operation, consisting in the insertion of needles into certain parts of the body for alleviating pain, or for the cure of different species of rheumatism, neuralgia, eye diseases, &c. It is easily performed, gives little pain, causes neither bleeding nor inflammation, and seems at times of surprising efficacy.

Adagio (Italian; à-dä'jō), a musical term, expressing a slow time, slower than *andante* and less so than *largo*.

Adâl', a country in Africa, east of Abyssinia and north-westward of Tajurrah Bay, inhabited by a dark-brown race of same

name, of nomadic habits, Mohammedans in religion; towns Aussa and Tajurrah. Part of the coast here is held by the French.

Ad'albert of Prague, called 'the apostle of the Prussians,' son of a Bohemian nobleman, born about 955, appointed Bishop of Prague in 983, laboured in vain among the heathenish Bohemians, resolved to convert the pagans of Prussia, but was murdered in the attempt in 997.

Ada'lia, a seaport on the south coast of Asia Minor. Pop. 13,000.

Adam (à-dän), ADOLPHE CHARLES, a French composer, more especially of comic operas; born 1803, died 1856. Wrote *Le postillon de Lonjumeau* and *Le Brasseur de Preston* (Brewer of Preston).

Adam, ALBRECHT, a German painter of battles and animals; born 1786, died 1862. Three sons of his have also distinguished themselves as painters, especially Franz, born 1815, among whose best pictures are several representing scenes of the Franco-German war.

Adam, ALEXANDER, a Scottish classical scholar, born in 1741, became in 1768 rector of the High School of Edinburgh, and died there in 1809. Wrote *Principles of Latin and English Grammar*; *Roman Antiquities*, a useful school-book; *Summary of Geography and History*; *Classical Biography*, &c.

Adam, ROBERT, an eminent Scottish architect, was born in 1728, and was a son of William Adam, architect. He resided several years in Italy, visited Spalatro, in Dalmatia, and published a work on the ruined palace of Diocletian there. In conjunction with his brother James he was much employed by the English nobility and gentry in constructing modern and embellishing ancient mansions. Among their works are the Register House and the University Buildings, Edinburgh, the Royal Infirmary, Glasgow, and the Adelphi Buildings, London. Robert Adam died in 1792, and was buried in Westminster Abbey; his brother James died in 1794.

Adam and Eve, the names given in Scripture to our first parents, an account of whom and their immediate descendants is given in the early chapters of Genesis. Cain, Abel, and Seth are all their sons that are mentioned by name; but we are told that they had other sons as well as daughters, and that Adam finally died at the age of 930 years. There are numerous Rabbinical additions to the Scripture narrative of

an extravagant character, such as the myth of Adam having a wife before Eve, named *Lilith*, who became the mother of giants and evil spirits. Other legends or inventions are contained in the Koran.

Adam de la Hale, an early French writer and musician; born 1240, died 1287. His *Jeu de Robin et de Marion* may be regarded as the first comic opera ever written.

Ad'amant, an old name for the diamond; also used in a vague way to imply a substance of impenetrable hardness.

Adaman'tine Spar, a name of the mineral corundum or of a brownish variety of it.

Adama'wa, a region of Central Africa, between lat. 6° and 10° N., and lon. 11° and 17° E.; also called *Fumbina*. Much of the surface is hilly or mountainous, Mount Atlantika being 9000 or 10,000 feet. The principal river is the Benue. A great part of the country is covered with thick forests. The inhabitants are industrious and intelligent. Slaves and ivory are the chief articles of trade. Chief town Yola.

Ad'amites, a name of sects or religious bodies that have appeared at various times: so called because both men and women were said to appear naked in their assemblies, either to imitate Adam in the state of innocence or to prove the control which they possessed over their passions.

Adam'nan, St., born in Ireland about 624, was elected abbot of Iona in 679, and died there about 703 or 704. He is best known from his *Life of St. Columba*.

Adams, Mass., a prosperous manufacturing village 20 miles from Pittsfield. Pop. in 1890, 9206. See *North Adams*.

Ad'ams, CHARLES FRANCIS, American litterateur and statesman, is a son of John Quincy Adams, and was born in 1807. His youthful years were spent in Europe, partly in England; but he finished his education at Harvard, and afterwards studied law. After serving some years in the Massachusetts legislature was elected to congress in 1858. In 1861 he was sent to England as American minister, and here he remained for seven years, performing the arduous duties of his office with the utmost tact and ability. He has edited a complete edition of his grandfather's works in ten vols., with a life. He was one of the arbitrators on the Alabama claims. Died 1886.

Adams, JOHN, second president of the United States, was born at Braintree (now Quincy), Massachusetts, 19th October, 1735.

He was educated at Harvard University, and adopted the law as a profession. His attention was directed to politics by the question as to the right of the English parliament to tax the colonies, and in 1765 he published some essays strongly opposed to



John Adams, Second President of the United States.

the claims of the mother country. As a member of the new American congress in 1774, 1775, and 1776 he was strenuous in his opposition to the home government, and in organizing the various departments of the colonial government. On 13th May, 1776, he seconded the motion for a declaration of independence proposed by Lee of Virginia, and was appointed a member of committee to draw it up. The declaration was actually drawn up by Jefferson, but it was Adams who fought it through congress. In 1778 he went to France on a special mission, but soon came back and again returned, and for nine years resided abroad as representative of his country in France, Holland, and England. After taking part in the peace negotiations he was appointed, in 1785, the first ambassador of the United States to the court of St. James. He was recalled in 1788, and in the same year elected vice-president of the republic under Washington. In 1792 he was re-elected vice-president and at the following election in 1796 was chosen president in succession to Washington. The commonwealth was then divided into two parties, the federalists, who favoured aristocratic and were suspected of monarchic views, and the republicans. Adams adhered to the

former party, with which his views of government had always been in accordance, but the real leader of the party was Hamilton, with whom Adams did not agree, and who tried to prevent his election. His term of office proved a stormy one, which broke up and dissolved the federalist party. His re-election in 1800 was again opposed by the efforts of Hamilton, which ended in effecting the return of the republican candidate Jefferson. Thus it happened that when Adams retired from office his influence and popularity with both parties were at an end, and he sunk at once into the obscurity of private life. He had the consolation, however, of living to see his son president. He died 4th July, 1826, the fiftieth anniversary of the declaration of independence, and on the same day as Jefferson. His works have been ably edited by his grandson Charles Francis Adams.

Adams, JOHN COUCH, an English astronomer, born in 1819, studied at Cambridge, and was senior wrangler in 1843. His investigations into the irregularities in the motion of the planet Uranus led him to the conclusion that they must be caused by another more distant planet, and the results of his labours were communicated in September and October, 1845, to Professor Challis and Airy the astronomer royal. The French astronomer Leverrier had by this time been engaged in the same line of research, and had come to substantially the same results, which, being published in 1846, led to the actual discovery of the planet Neptune by Galle of Berlin. In 1858 Adams was Lowndean professor of astronomy and geometry at Cambridge. Died Jan. 24, 1892.

Adams, JOHN QUINCY, sixth president of the United States, son of John Adams, second president, was born 11th July, 1767. Accompanying his father to Europe he received part of his education there, but graduated at Harvard in 1788. Having adopted the legal profession, in 1791 he was admitted to the bar. He now began to take an active interest in politics, and some letters that he wrote having attracted general attention, in 1794 Washington appointed him minister to the Hague. He afterwards was sent to Portugal, and by his father to Berlin. In 1798 he received a commission to negotiate a treaty of commerce with Sweden. On the accession of Jefferson to the presidency in 1801 he was recalled. The federalist party (that of his father), which was now declining, had suffi-

cient influence in Massachusetts to elect him to the senate in 1803. On an important question of foreign policy, that of embargo, he abandoned his party, and resigned his seat on this account. He was appointed to the professorship of rhetoric at Cambridge, which he held from 1806 to 1809. In 1809 he went as ambassador to Russia. He assisted in negotiating the peace of 1814 with England, and was afterwards appointed resident minister at London. Under Monroe as president he was secretary of state, and at the expiration of Monroe's double term of office he succeeded him in the presidency (1825). He was not very successful as president, and at the end of his term (1829) he was not re-elected. In 1831 he was returned to congress by Massachusetts, and continued to represent this state till his death, his efforts being now chiefly on behalf of the abolitionist party. He died 23d February, 1848.

Adams, SAMUEL, an American statesman, second cousin of President John Adams, was born in Boston, Sept. 27th, 1722, and was educated at Harvard College. He early devoted himself to politics, and in connection with the dispute between America and the mother country he showed himself one of the most unwearied, efficient, and disinterested assertors of American freedom and independence. He was one of the signers of the declaration of 1776, which he laboured most indefatigably to bring forward. He sat in congress eight years, in 1789-94 was lieutenant-governor of Massachusetts, in 1794-97 governor, when he retired from public life. He died Oct. 2, 1803.

Adam's Apple, the popular name of the prominence seen in the front of the throat in man, and which is formed by the portion of the larynx known as the *thyroid cartilage*. It is much smaller and less visible in females than in males, and is so named from the idle notion that it was caused by a piece of the forbidden fruit having stuck in Adam's throat.

Adam's Bridge, a chain of reefs, sandbanks, and islands stretching between India and Ceylon: so called because the Moham-medans believe that when Adam was driven from paradise he had to pass by this way to Ceylon (where is also Adam's Peak).

Adam's Needle, a popular name of the *Yucca* plant.

Adam's Peak, one of the highest mountains in Ceylon, 45 m. east-south-east of

Colombo, conical, isolated, and 7420 feet high. On the top, a rocky area of 64 feet by 45, is a hollow in the rock 5 feet long bearing a rude resemblance to a human foot, which the Brahmans believe to be the footprint of Siva, the Buddhists that of Buddha, the Mohammedans that of Adam. Devotees of all creeds here meet and present their offerings (chiefly rhododendron flowers) to the sacred footprint. The ascent is very steep, and towards the summit is assisted by steps cut and iron chains riveted in the rock.

Adamson, PATRICK, a Scottish divine and Latin poet; born 1543, died 1592. He was educated at St. Andrews, lived some years in France, was minister of Paisley, and latterly Archbishop of St. Andrews, in which position he made himself very obnoxious to the Presbyterian party. Deprived of the revenues of the see he died in indigence. He turned portions of the Bible into Latin verse.

Ad'ana, an ancient town of south-eastern Asia Minor, on the Sihun, which is here navigable, 30 m. from the Mediterranean, well built, and with considerable trade. Pop. estimated at 24,000 to 40,000.

Adanson (à-dân-sôn), MICHEL, French naturalist and traveller (of Scottish extraction); born 1727, died 1806. He lived five years in Senegal, and wrote a natural history of this region as well as works on botany. The baobab genus is named *Adansonia* after him.

Adanso'nia. See preceding art. and *Baobab*.

A'dar, the twelfth month of the Hebrew sacred and sixth of the civil year, answering to part of February and part of March.

Adda (ancient *Addua*), a river of North Italy, which, descending from the Rætian Alps, falls into Lake Como, and leaving this joins the Po, after a course of about 170 miles.

Adda, a species of lizard, more commonly called skink.

Ad'dax, a species of antelope (*Hippotragus nasomaculatus*) of the size of a large ass,

with much of its make. The horns of the male are about 4 feet long, beautifully twisted into a wide-sweeping spiral of two turns and a half, with the points directed outwards. It has tufts of hair on the forehead and throat, and large broad hoofs. It inhabits the sandy regions of Nubia and Kordofan, and is also found in Caffraria.

Adder, a name often applied to the common viper as well as to other kinds of venomous serpents. See *Viper*.

Adder-pike (*Trachinus vipera*), a small species of the weever fish, called also the Lesser Weever or Sting-fish. See *Weever*.

Adder-stone, the name given in different parts of Britain to certain rounded perforated stones or glass beads found occasionally, and supposed to have a kind of supernatural efficacy in curing the bites of adders. They are believed to have been anciently used as spindle-whorls, that is, a kind of small fly-wheels to keep up the rotatory motion of the spindle.

Adder's-tongue, a species of common fern (*Ophioglossum vulgatum*), whose spores are produced on a spike, supposed to resemble a serpent's tongue.

Adder's-wort, a name of snakeweed or bistort (*Polygōnum Bistorta*), from its supposed virtue in curing the bite of serpents.

Ad'dington, HENRY, Viscount Sidmouth, born 1755, died 1844. Entered parliament, 1783, as a warm supporter of Pitt. Was elected speaker of the House of Commons, 1789, and in 1801 invited by the king to form an administration, chiefly signalized by the conclusion of the Peace of Amiens. Quarrelled with Pitt, whom he bitterly attacked. Was home secretary from 1812 till 1822, his repressive policy making him remarkably unpopular with the nation at large. Retired from official life in 1824.

Ad'dison, JOSEPH, an eminent English essayist, son of the Rev. Lancelot Addison, afterwards dean of Lichfield, born at Milston, Wiltshire, 1st May, 1672, died 17th June, 1719. He was educated at the Charterhouse, where he became acquainted with Steele, and afterwards at Oxford. He held a fellowship from 1697 till 1711, and gained much praise for his Latin poetry and other contributions to classical literature. He secured as his earliest patron the poet Dryden, who inserted some of his verses in his *Miscellanies* in 1693. A translation of the fourth Georgic, with the exception of the story of Aristæus, by Addison, appeared in the same collection in 1694, and he subse-



Head of Addax (*Hippotragus nasomaculatus*).

quently translated for it two and a half books of Ovid. Dryden also prefixed his prose essay on Virgil's *Georgics* to his own translation of that poem, which appeared in 1697. An early patron of his was Charles Montague, afterwards Earl of Halifax; another was Lord Somers, who procured him a pension of £300 a year to enable him to qualify for diplomatic employments by foreign travels. He spent from the autumn of 1699 to that of 1703 on the Continent, where he became acquainted with Malebranche, Boileau, &c. During his residence abroad his tragedy of *Cato* is supposed to have been written. During his journey across Mount Cenis he wrote his *Letter from Italy*, esteemed the best of his poems, and in Germany his *Dialogues on Medals*, which was not published till after his death. His *Remarks on Several Parts of Italy in the Years 1701–3* was published in 1705. His political friends lost power on the death of William III., but *The Campaign*, a poem on the battle of Blenheim, procured him an appointment as a commissioner of appeal on excise. In 1706 he received an under-secretaryship, in 1707 accompanied Halifax on a mission to Hanover, in 1709 became secretary to the viceroy of Ireland, and keeper of the records. In 1708 he was elected M.P. for Lostwithiel, a seat he exchanged in 1710 for Malmesbury, which place he continued to represent till his death. From October, 1709, to January, 1711, he contributed 75 papers to the *Tatler*, either wholly by himself, or in conjunction with Steele, thus founding the new literary school of the Essayists. For the *Spectator* (2d January, 1711, to 6th December, 1712) he wrote 274 papers, all signed by one of the four letters C., L., I., O. His tragedy of *Cato*, produced April, 1713, ran for twenty nights, and was translated into French, Italian, German, and Latin. His other contributions to periodicals included 51 papers to the *Guardian* (May to September, 1713), 24 papers to a revived *Spectator* conducted by Budgell, and 2 papers to *Steele's Lover*. On the death of Queen Anne he successively became secretary to the lords justices, secretary to the Irish viceroy, and one of the lords commissioners of trade. He published the *Freeholder* (23d December, 1715, to 9th June, 1716), a political *Spectator*. In August, 1716, he married the Countess of Warwick, which marriage is said to have been uncomfortable. He retired from public life, March, 1718,

with a pension of £1500 a year. He formed a close friendship with Swift, and was chief of a distinguished literary circle. He had literary quarrels with Pope and Gay, the former of whom in revenge wrote the satire contained in his lines on Atticus in the epistle to Arbuthnot. He also had a paltry quarrel over politics with his ancient comrade Steele. His death took place at Holland House, its cause being dropsy and asthma. He was buried in Westminster Abbey. Of his style as a writer so much has been said that nothing remains to say but to quote the dictum of Johnson, 'Whoever wishes to attain an English style, familiar but not coarse, and elegant but not ostentatious, must give his days and nights to the volumes of Addison.' He had great conversational powers, and his intimates speak in the strongest terms of the enjoyment derived from his society, but he was extremely reserved before strangers. His *Dialogues on Medals* and *Evidences of the Christian Religion* were published posthumously in Tickell's collected edition of his works.

Addison's Disease (from Dr. Addison, Guy's Hospital, London, who traced the disease to its source), a fatal disease, the seat of which is the two glandular bodies placed one at the front of the upper part of each kidney, and called *supra-renal capsules*. It is characterized by anæmia or bloodlessness, extreme prostration, and the brownish or olive-green colour of the skin. Death usually results from weakness, and commonly within a year.

Addled Parliament, a parliament called April 5, 1614, in order to legalize the customs duties imposed by James I., but which, proceeding to the redress of grievances instead of granting supply, was dissolved, June 7, without passing a single bill.

Address, a document containing an expression of thanks, congratulation, satisfaction, or dissatisfaction, &c. It is the custom of the British parliament to return an address to the speech delivered by the sovereign at the commencement of every session.

Address, FORMS OF. The following are the principal modes of formally addressing titled personages or persons holding official rank in Great Britain:—

The King or Queen.—Address in writing: To the King's (Queen's) most excellent Majesty. Say: Sire or Madam, Your Majesty.

The Royal Family.—His Royal Highness (H.R.H.) the Prince of Wales, His Royal Highness the Duke of C—, His Royal Highness Prince

A— A royal duke should be addressed as Sir, not My Lord Duke; and referred to as Your Royal Highness. A princess is addressed Her Royal Highness the Duchess of —, Her Royal Highness Princess A—; and personally as Madam, Your Royal Highness.

Duke and Ducal Family.—His Grace the Duke of —; My Lord Duke, Your Grace. Her Grace the Duchess of —; Madam, Your Grace. The duke's eldest son is in law only an esquire, but in courtesy takes a secondary title of his father, and is addressed as if he held it by right. A younger son is addressed The Right Honourable Lord J— B—; My Lord, Your Lordship; a daughter, The Right Honourable Lady M— B— (Christian and surname); Madam, Your Ladyship. A duke's, marquis's, or earl's daughter marrying a commoner simply changes her surname for his.

The Lord-lieutenant of Ireland is styled His Excellency, or, if a duke, His Grace, and addressed according to his titular rank.

Marquis.—The Most Honourable the Marquis of —; My Lord Marquis, My Lord. The eldest son has his courtesy title, as in the case of a duke's eldest son; the younger sons and the daughters are all styled Right Honourable: The Right Hon. Lord G— F—; The Right Honourable Lady C— T—; Madam, Your Ladyship.

Earl.—The Right Honourable the Earl of —; My Lord, Your Lordship. The Right Honourable the Countess of —; Madam, Your Ladyship. The eldest son is addressed by his courtesy title; younger son, The Honourable G— T—; Sir, the daughter, as duke's and marquis's daughter.

Viscount.—The Right Honourable Lord Viscount —; My Lord, Your Lordship. The Right Honourable the Viscountess —; Madam, Your Ladyship. Son: The Honourable A— B— (Christian and surname); Sir. Daughter: The Honourable J— C— (Christian and surname); Madame; if married, The Honourable Mrs. — (married name).

Baron.—The Right Honourable Lord —; My Lord, Your Lordship. The Right Honourable Lady —; Madam, your Ladyship. Son: The Honourable J— C—; Sir. Daughter: The Honourable M— H—; if married, The Honourable Mrs. —, same as viscount's daughter.

Baronet.—Sir A— B—, Baronet; Sir; more familiarly Dear Sir A —.

Knight.—Sir C— D—, Kt., or K.G., K.C.B., K.G.C.B., &c., according to rank. The wives of baronets and knights are styled Lady, Lady —.

Archbishop.—His Grace the Lord Archbishop of —; My Lord Archbishop; Your Grace. An archbishop is also styled Most Reverend.

Bishop.—The Right Rev. the Lord Bishop of —; My Lord. The wives of prelates have no special title. Bishops not connected with the English established church may be addressed—The Right Reverend Bishop —; Right Reverend Sir.

Dean.—The Very Reverend; Sir; Mr. Dean.

Members of the Privy Council, members and ex-members of cabinet, the Speaker of the House of Commons, the Lord Chancellor and Lord Chief Justice, Lord Advocate, the lords of the treasury and admiralty, are called Right Honourable; members of parliament, Honourable. Ambassadors, governors of colonies, &c., are styled Excellency. Judges are addressed as the Honourable Mr. Justice —.

The Lord Mayors of London, York, and Dublin, and the Lord Provost of Edinburgh, are styled Right Honourable; the Lord Provost of Glasgow,

Honourable. A Mayor is addressed as Right Worshipful. Lords of Session (Scotland) have the courtesy title of Lord prefixed to their name, and are addressed as My Lord, Your Lordship. Sheriffs and their substitutes are addressed in their courts in Scotland as My Lord.

In the United States persons holding official rank are similarly addressed; thus the President is styled His Excellency, as are also governors of states and foreign ministers; the vice-president, lieutenant-governors, senators, representatives, judges, and mayors are styled Honourable.

Adduc'tor, a muscle which draws one part of the body towards another: applied in zoology to one of the muscles which bring together the valves of the shell of the bivalve molluscs.

Adel' See *Adal*.

Ade'la, born 1062, died 1137, fourth daughter of William the Conqueror, wife of Stephen, Earl of Blois and Chartres, and mother of Stephen, King of England. In her husband's absence in the first crusade, and after his death as regent for her sons she proved herself an able ruler and a generous patroness of learning.

Adelaide (ad'e-lād) the capital of South Australia, 6 miles east from Port Adelaide (on St. Vincent Gulf), its port, with which it is united by railway, founded in 1837, and named after the queen of William IV. Situated on a large plain, it is built nearly in the form of a square, with the streets at right angles, and is divided into North and South Adelaide, separated by the river Torrens, which is crossed by several bridges, and by means of a dam is converted into a fine sheet of water. The public buildings comprise the Government House, the town-hall, the post and telegraph offices, the government offices, court-houses, the houses of legislature, the University, South Australian Institute, &c. There is a complete service of tramway cars. Adelaide is connected by railway with Melbourne, and is the terminus of the overland telegraph to Port Darwin. It has a large trade. Pop. (including suburbs), 1891, 133,252.

Adelaide, daughter of George, Duke of Saxe-Coburg-Meiningen, and wife of the Duke of Clarence, afterwards William IV., King of England; born 1792, died 1849; married 11th July, 1818, had two daughters, who died in infancy. She became queen-consort on William attaining the throne in 1830, and was for a time unpopular from being supposed to be averse to reform. On the death of William she passed into private life, with an allowance of £100,000 a year.

Adelard of Bath, an English philosopher.

ical writer of the twelfth century. He travelled through Spain, north of Africa, Greece, and Asia Minor, and acquired much knowledge from the Arabs, which he put in systematic shape. Chief works, *Perdifficiles Quæstiones Naturales*, and *De Eodem et Diverso*.

Adelsberg (ä'délz-berh), a small town of Southern Austria, in Carniola, midway between Trieste and Laibach, remarkable for the wonderful stalactite cave in its vicinity. The most extended of the ramifications which compose it reaches to over 2 miles from the entrance, at which the river Poik disappears, and is heard rushing below. The stalactites and stalagmites are of the most varied and often beautiful forms, and have received fanciful appellations, as they resemble columns, statues, &c.

Adelung (äd'e-lung), JOHANN CHRISTOPH, a German philologist; born 1732, died 1806. In 1759 he was appointed professor in the Protestant academy at Erfurt, and two years after removed to Leipzig, where he applied himself to the works by which he made so great a name, particularly his German dictionary, *Grammatisch-kritisches Wörterbuch der hochdeutschen Mundart* (Leipzig, 1774–86), and his *Mithridates*, a work on general philology. In 1787 he was appointed librarian of the public library in Dresden—an office which he held till his death.—FRIEDRICH VON ADELUNG, nephew of the above, also distinguished himself as a philologist. Was tutor to the Grand-duke Nicholas, afterwards Emperor of Russia, and became president of the Academy of Sciences at St. Petersburg. Born 1768, died 1843.

A'den, a seaport town and territory belonging to Britain, on the south-west coast of Arabia, in a dry and barren district, the town being almost entirely closed in by an amphitheatre of rocks, and possessing an admirable harbour. Occupying an important military position, Aden is strongly fortified and permanently garrisoned. It is of importance also as a coaling station for steamers, and carries on a great amount of commerce, forming an entrepôt and place of transshipment for goods valued at £4,000,000 a year. Its greatest drawback is the scarcity of fresh water, which is obtained partly from wells, partly from rock-cisterns that receive the rain, and partly by condensation from salt water—the only unfailing means of supply. The peninsula on which it stands somewhat

resembles the rock of Gibraltar, and has been rendered as formidable. Aden was a Roman colony, and in the middle ages it was a great entrepôt of the Eastern trade. It was acquired by Britain in 1839, after which it was attacked repeatedly by the Arabs. Besides the town and peninsula, some 34 square miles of additional territory having recently been purchased, the total area of the settlement is 70 square miles. It is attached to the Bombay Presidency. Pop. (including Perim) 1891, 41,910.

Adenanthe'ra, a genus of trees and shrubs, natives of the East Indies and Ceylon, nat. order Leguminosæ. *A. pavonina* is one of the largest and handsomest trees of India, and yields hard solid timber called red sandal-wood. The bright scarlet seeds, from their equality in weight (each = 4 grains), are used by goldsmiths in the East as weights.

Adeni'tis (Gr. *adēn*, a gland), in medicine, inflammation of the lymphatic glands.

Adept, the highest grade of the Buddhists and Theosophists.

Aderno', a town of Sicily, 18 miles N.W. of Catania and about 10 miles W.S.W. of Mount Etna. Pop. 19,180.

Adersbach Rocks (ä'dërz-bäh), a remarkable group of isolated columnar rocks on the frontiers of Bohemia and Silesia, occupying several square miles in extent.

Adessena'rian, one of a sect of Christians which holds that there is a real presence of Christ in the Eucharist, but denying that it is effected by transubstantiation.

Adhesion, the tendency of two bodies to stick together when put in close contact, or the mutual attraction of their surfaces; distinguished from *cohesion*, which denotes the mutual attraction between the particles of a homogeneous body. Adhesion may exist between two solids, between a solid and a fluid, or between two fluids. A plate of glass or of polished metal laid on the surface of water and attached to one arm of a balance will support much more than its own weight in the opposite scale from the force of adhesion between the water and the plate. From the same force arises the tendency of most liquids, when gently poured from a jar, to run down the exterior of a vessel or along any other surface they meet.

Adian'tum, a genus of ferns; the maiden-hair-fern.

Adiaph'orist (Gr. *adiaphoros*, indifferent), a name given in the sixteenth century to Melanchthon's party, who held some

opinions and ceremonies to be indifferent which Luther condemned as sinful or heretical.

Adige (ä'dē-jā), German ETSCH (ancient *Athēsis*), a river of Northern Italy, which rises in the Rhætian Alps, and after a south and east course of about 180 miles, during which it passes Verona and Legnago, falls into the Adriatic, forming a delta connected with that of the Po.

Ad'ipocere (-sēr) (L. *adeps*, fat, and *cera*, wax), a substance of a light-brown colour formed by animal matter when protected from atmospheric air, and under certain circumstances of temperature and humidity.

Ad'ipose tissue, the cellular tissue containing the oily or fatty matter of the body. It underlies the skin, surrounds the large vessels and nerves, invests the kidneys, &c., and sometimes accumulates in large masses.

Adiron'dack Mountains, in the U. States, a group belonging to the Appalachian chain, extending from the N.E. corner of the state of New York to near its centre. The scenery is wild and grand, diversified by numerous beautiful lakes, and the whole region is a favourite resort of sportsmen and tourists. There is a public park.

Ad'it, a more or less horizontal opening, giving access to the shaft of a mine. It is made to slope gradually from the farthest point in the interior to the mouth, and by means of it the principal drainage is usually carried on. See *Mine*.

Ad'jective, in grammar, a word used to denote some quality in the noun or substantive to which it is accessory. The adjective is indeclinable in English (but has *degrees* of comparison), and generally precedes the noun, while in most other European languages it follows the inflections of the substantive, and is more commonly placed after it, though in German it precedes it, as in English.

Adjudica'tion, in law, the act of granting something to a litigant by a judicial sentence.

Adjust'ment, in marine insurance, is the settling of the amount of the loss which the insurer is entitled under a particular policy to recover, and if the policy is subscribed by more than one underwriter, of the amounts which the underwriters respectively are liable to pay.

Ad'jutant, an officer appointed to each regiment or battalion, whose duty is to assist the commander. He is charged with instruction in drill, and all the interior dis-

cipline, duties, and efficiency of the corps. He has the charge of all documents and correspondence, and is the channel of communication for all orders.

Adjutant-bird, *Leptoptilus argāla*, a large grallatorial or wading bird of the stork family, native of the warmer parts of India, where it is known as Hurgāla or Argāla.



Adjutant-bird (*Leptoptilus argala*).

It stands about five feet high, has an enormous bill, nearly bare head and neck, and a pouch hanging from the under part of the neck. It is one of the most voracious carnivorous birds known, and in India, from its devouring all sorts of carrion and noxious animals, is protected by law. From underneath the wings are obtained those light downy feathers known as *marabou* feathers, from the name of an allied species of bird (*L. marabou*) inhabiting Western Africa, and also producing them.

Adjutant-general is the chief staff-officer of an army charged with the execution of all orders relating to the recruitment, equipment, and efficiency of the troops, and who distributes to them the orders of the day.—Among the Jesuits this name was given to a select number of fathers, who resided with the general of the order, and had each a province or country assigned to him.

Ad'jutators, in English history, representatives elected by the parliamentary forces in 1647 to act with the officers in compelling parliament to satisfy the demands of the army.

Adme'tus, in Greek mythology, King of

Phœræ, in Thessaly, and husband of Alcestis, who gave signal proof of her attachment by consenting to die in order to prolong her husband's life. See *Alcestis*.

Administra'tion, in politics, the executive power or body, the ministry or cabinet.

Admin'istrator, in law, the person to whom the goods of a man dying intestate are committed by the proper authority, and who is bound to account when required.

Ad'miral, the commander-in-chief of a squadron or fleet of ships of war, or of the entire naval force of a country, or simply a naval officer of the highest rank. In the British navy admirals are of four ranks — admiral of the fleet, admiral, vice-admiral, and rear-admiral. They were also divided formerly into three classes, named after the colours of their respective flags, admirals of the *red*, of the *white*, and of the *blue*. In 1864, however, this distinction was given up, and now there is one flag common to all ships of war, namely, the white ensign divided into four quarters by the cross of St. George, and having the union in the upper corner next the staff.—The title *admiral of the fleet* is conferred on a few admirals, and carries an increase of pay along with it.—A *vice-admiral* is next in rank and command to the admiral: he carries his flag at the foretop-gallant-mast head, while an admiral carries his at the main. A *rear-admiral*, next in rank to the vice-admiral, carries his flag at the mizzen-top-gallant-mast head.—*Lord high admiral*, in Great Britain, an officer who (when this rare dignity is conferred) is at the head of the naval administration of Great Britain. In the United States navy the office of rear-admiral was created in 1862, in compliment to Farragut for heroism in the civil war; vice-admiral, also for him, in 1864; and admiral in 1866, likewise for Farragut. The offices of admiral and vice-admiral have been discontinued, and there are only six rear-admirals authorized by law. The office of rear-admiral is equivalent to that of major-general in the army.

Ad'miralty, that department of the government of a country that is at the head of its naval service. In Britain the lords commissioners of the admiralty were formerly seven, but are now five in number, with the addition of a civil lord, at the head being the *first lord*, and four others being *naval lords*. The U. S. District Court exercises jurisdiction over all maritime contracts, torts, injuries, or offences. In cer-

tain cases causes may be removed from this court to the Circuit and Supreme Courts.

Admiralty Charts are charts issued by the hydrographic department of the admiralty of Britain; they are prepared by specially appointed surveyors and draughtsmen, and besides being supplied to every ship in the fleet, are sold to the general public at prices much less than their cost. In connection with these charts there are published books of sailing directions, lists of lights, &c. The navigating charts are generally on the scale of half an inch to a mile, and show all the dangers of the coasts with sufficient distinctness to enable the seaman to avoid them; the charts of larger size exhibit all the intricacies of the coast.

Admiralty Court, a court which takes cognizance of civil and criminal causes of a maritime nature, including captures in war made, and offences committed, on the high seas, and has to do with many matters connected with maritime affairs. In England the admiralty court was once held before the lord high admiral, and at a later period was presided over by his deputy or the deputy of the lords commissioners. It now forms a branch of the probate, divorce, and admiralty division of the High Court of Justice. There is a separate Irish admiralty court. In Scotland admiralty cases are now prosecuted in the Court of Session, or in the sheriff court. In the United States admiralty cases are taken up in the first instance by the district courts.

Admiralty Island, an island belonging to the United States off the north-west coast of North America, 80 or 90 miles long and about 20 broad, covered with fine timber and inhabited by Sitka Indians.

Admiralty Islands, a cluster of islands, north of New Guinea, in Bismarck Archipelago, now belonging to Germany. The largest is about 60 miles in length; the rest are much smaller. They are covered with a luxuriant vegetation, and possess dense groves of coconut trees. The islanders are of a tawny colour, have no metal (unless what is imported), but use tools of stone and shell.

Ad'nate, in botany, applied to a part growing attached to another and principal part by its whole length, as stipules adnate to the leaf-stalk.



1, Adnate anther.
2, Adnate stipule.

Adobe (ă-dŏ'bā), the Spanish name for a brick made of loamy earth, containing about two-thirds fine sand and one-third clayey dust, sun-dried; in common use for building in Mexico, Texas, and Central America.

Adol'phus, JOHN, 1766-1845, an able English criminal lawyer, and author of the *History of England from the Accession of George III.* and *Biographical Memoirs of the French Revolution*.

Adolphus of Nassau, elected Emperor of Germany, 1292. In 1298 the college of electors transferred the crown to Albert of Austria, but Adolphus refusing to abdicate a war ensued, in which he fell, after a heroic resistance, July 2, 1298.

Adonai (ad'o-nī), a name of God among the Jews. See *Jehovah*.

Ado'ni, a town and district in Madras; population of former 22,732, of latter 179,448. Well known for excellent silk and cotton fabrics.

Ado'nis, a mythological personage, originally a deity of the Phœnicians, but borrowed into Greek mythology. He was represented as being a great favourite of Aphroditē (Venus), who accompanied him when engaged in hunting, of which he was very fond. He received a mortal wound from the tusk of a wild boar, and when the goddess hurried to his assistance she found him lifeless, whereupon she caused his blood to give rise to the anemone. The worship of Adonis, which arose in Phœnicia, latterly was widely spread round the Mediterranean. The name Adonis is akin to the Hebrew *Adonai*, Lord. See *Tammuz*.

Ado'nis, a small river rising in Lebanon and flowing to the Mediterranean. When in flood it is tinged of a red colour, and so is connected with the legend of Adonis.

Ado'nis, a genus of ranunculaceous plants. In the corn-adonis or pheasant's eye (*A. autumnālis*) the petals are bright scarlet like the blood of Adonis, from which the plant is fabled to have sprung.

Adoptia'ni, a religious sect which asserted that Christ, as to his divine nature, was properly the Son of God; but as to his human nature, only such by adoption. Elipandus, archbishop of Toledo, and Felix, bishop of Urgel, in Spain, avowed this doctrine in 783, and made proselytes both in Spain and France. The heresy was condemned by several synods.

Adop'tion, the admission of a stranger by birth to the privileges of a child. Among the ancient Greeks and Romans, and also

some modern nations, adoption is placed under legal regulation. In Rome the effect of adoption was to create the legal relation of father and son, just as if the person adopted was born of the blood of the adopter in lawful marriage. The adopted son took the name of his adopter, and was bound to perform his new father's religious duties. Adoption is not recognized by the law of England and Scotland; there are legal means to enable a person to assume the name and arms, and to inherit the property of another. In some of the United States adoption is regulated by laws not very dissimilar to what prevailed among the Romans.

Adour (ă-dör), a river of France, rising in the Pyrenees, and falling into the sea a little below Bayonne; length about 200 miles; partly navigable.

Ado'wa, a town of Abyssinia, in Tigré, at an elevation of 6270 feet; the chief commercial depôt on the caravan route from Massowa to Gondar. Pop. about 4000.

Adra (ă'drâ), a seaport of Southern Spain, in Andalusia, near the mouth of the Adra, on the Mediterranean; with marble quarries and lead works. Pop. 11,320.

Adramit'ti (ancient *Adramyttium*; Turkish *Edremid*), a town of Turkey in Asia, near the head of the gulf of the same name, 80 miles north of Smyrna. Pop. 8000.

Adrar', a district in the Western Sahara peopled by Berbers possessing camels, sheep, and oxen, and cultivating dates, wheat, barley, and melons. Chief towns, Wadan and Shingit, which has inexhaustible beds of rock-salt.

Adria (ă'dri-ă), a cathedral city of Northern Italy, province of Rovigo, between the Po and the Adige, on the site of the ancient town of same name, whence the Adriatic derives its appellation. Owing to alluvial deposits the sea is now 17 miles distant. Pop. 11,554.

Adrian, the name of six popes. The first, a Roman, ruled from 772-795; a contemporary and friend of Charlemagne. He expended vast sums in rebuilding the walls and restoring the aqueducts of Rome.—**Adrian II.**, a Roman, was elected pope in 867, at the age of seventy-five years. He died in 872, in the midst of conflicts with the Greek Church.—**Adrian III.**, a Roman, elected 884, was pope for one year and four months only. He was the first pope that changed his name on the occasion of his exaltation.—**Adrian IV.**, originally named

Nicolas Breakspear, the only Englishman that ever occupied the papal chair, was born about 1100, and died 1159. He was a native of Hertfordshire, studied in France, and became abbot of St. Rufus in Provence, cardinal and legate to Norway. Chosen pope in 1154, his reign is chiefly remarkable for his almost constant struggle for supremacy with Frederick Barbarossa, who on one occasion had been forced to hold his stirrup, and had been crowned by him at Rome (1155). He issued the famous bull (1158) granting the sovereignty of Ireland, on condition of the payment of Peter's pence, to Henry II. — **Adrian V.**, previously called *Ottoboni da Fiesco*, of Genoa, settled, as legate of the pope, the dispute between King Henry III. of England and his nobles, in favour of the former; but died a month after his election to the papal chair (1276). — **Adrian VI.**, born at Utrecht in 1459, was elected to the papal chair, January 9, 1522. He tried to reform abuses in the church, but opposed the zeal of Luther with reproaches and threats, and even attempted to excite Erasmus and Zuinglius against him. Died 1523, after a reign of one year and a half.

A'drian, a town of the United States, in Michigan, 70 miles w.s.w. of Detroit. Its extensive water-power is employed in works of various kinds. Pop. 1890, 8756.

A'drian, PUBLIUS ÆLIUS HADRIANUS. See *Hadrian*.

Adriano'ple (Turkish *Edreneh*), an important city of Turkey in Europe, about 135 miles w.n.w. from Constantinople, on the Maritza (ancient *Hebrus*), at its junction with the Tundja and the Arda. It has a great mosque, among the most magnificent in the world; a palace, now in a state of decay; a grand aqueduct, and a splendid bazaar; manufactures of silk, woollen, and cotton stuffs, otto of roses, leather, &c., and an important trade. Adrianople received its present name from the Roman emperor Adrian (Hadrian). In 1361 it was taken by Amurath I., and was the residence of the Turkish sovereigns till the conquest of Constantinople in 1453. In 1829 it was taken by the Russians, and here was then concluded the peace of Adrianople, by which Russia received important accessions of territory in the Caucasus and on the coast of the Black Sea. The Russians occupied it also in 1878. Population, 60,000.

Adrian's (or Hadrian's) Wall. See *Roman Walls*.

Adriatic Sea, or GULF OF VENICE, an arm of the Mediterranean, stretching in a north-westerly direction from the Straits of Otranto, between Italy and the Turkish and Austrian dominions. Length, about 480 miles; average breadth, about 100; area, about 60,000 square miles. The rivers which it receives, particularly the Po, its principal feeder, have produced, and are still producing, great geological changes in its basin by their alluvial deposits. Hence *Adria*, between the Po and the Adige, which gives the sea its name, though once a flourishing seaport, is now 17 miles inland. The principal trading ports on the Italian side are Brindisi, Bari, Ancona, Sinigaglia, and Venice; on the east side Ragusa, Fiume, Pirano, Pola, and Trieste.

Adscripti Glebæ (L., persons attached to the soil), a term applied to a class of Roman slaves attached in perpetuity to and transferred with the land they cultivated. Colliers and salt workers in Scotland were in a similar position till 1775.

Adula'ria, a very pure, limpid, translucent variety of felspar, called by lapidaries *moonstone*, on account of the play of light exhibited by the arrangement of its crystal line structure. Found on the Alps, but the best specimens are from Ceylon. So called from *Adula*, one of the peaks of St. Gothard, where specimens are got.

Adule (ä-dö'le), ADU'LIS. See *Zulla*.

Adul'lam, CAVE OF, a cave to which David fled when persecuted by Saul, and whither he was followed by 'every one who was in distress, in debt, or discontented' (1 Sam. xxii. 1, 2). The name *Adullamites* was given to an English political party, consisting of Mr. R. Lowe, Lord Elcho, and other Liberals, who opposed the majority of their party on the Franchise Bill of 1866. The term originated from a speech of Mr. John Bright.

Adultera'tion, a term not only applied in its proper sense to the fraudulent mixture of articles of commerce, food, drink, drugs, seeds, &c., with noxious or inferior ingredients, but also by magistrates and analysts to accidental impurity, and even in some cases to actual substitution. The chief objects of adulteration are to increase the weight or volume of the article, to give a colour which either makes a good article more pleasing to the eye or else disguises an inferior one, to substitute a cheaper form of the article, or the same substance from which the strength has been extracted, or

ADULTERATION.

to give it a false strength.—Among the adulterations which are practised for the purpose of fraudulently increasing the weight or volume of an article are the following:—Bread is adulterated with alum or sulphate of copper, which gives solidity to the gluten of damaged or inferior flour; with chalk or carbonate of soda to correct the acidity of such flour; and with boiled rice or potatoes, which enables the bread to carry more water, and thus to produce a larger number of loaves from a given quantity of flour. Wheat flour is adulterated with other inferior flours, as the flour from rice, bean, Indian-corn, potato, and with sulphate of lime, alum, &c. Milk is usually adulterated with water. The adulterations generally present in butter consist of an undue proportion of salt and water, lard, tallow, and other fats; when of poor quality it is frequently coloured with a little annatto, and, at times, with the juice of carrots. Genuine butter should not contain less than 80 per cent of butter-fat. Cheese is also coloured with annatto and other substances. Tea is adulterated (chiefly in China) with sand, iron-filings, chalk, gypsum, China clay, exhausted tea leaves, and the leaves of the sycamore, horse-chestnut, and plum, whilst colour and weight are added by black-lead, indigo, Prussian-blue (one of the deleterious ingredients used by the Chinese in converting the lowest qualities of black into green teas), gum, turmeric, soapstone, catechu, and other substances. Coffee is mingled with chicory, roasted wheat, roasted beans, acorns, mangel-wurzel, rye-flour, and coloured with burned sugar and other materials. Chicory is adulterated with different flours, as rye, wheat, beans, &c., and coloured with ferruginous earths, burned sugar, Venetian red, &c. Cocoa and chocolate are mixed with the cheaper kinds of arrow-root, animal matter, corn, sago, tapioca, &c. Sugar (moist) may be adulterated to some extent with sand and flour. Tobacco is mixed with sugar and treacle, aloes, liquorice, oil, alum, &c., and such leaves as rhubarb, chicory, cabbage, burdock, coltsfoot, besides excess of salt and water. Snuffs are adulterated with carbonate of ammonia, glass, sand, colouring matter, &c. Confections are adulterated with flour and sulphate of lime. Preserved vegetables are kept green and poisoned by salts of copper. The acidity of mustard is commonly reduced by flour, and the colour of the compound is improved by turmeric. Pepper is adulterated with linseed-meal,

flour, mustard husks, &c. Colour is given to pickles by salts of copper, acetate of copper, &c. Ale is adulterated with common salt, *Cocculus Indicus*, grains of paradise, quassia, and other bitters, sulphate of iron, alum, &c. Porter and stout are mixed with sugar, treacle, salt, and an excess of water. Brandy is diluted with water, and burned sugar is added to improve the colour; sometimes bad whisky is flavoured and coloured so as to resemble brandy, and sold under its name. Gin is mixed with excess of water, and flavouring matters of various kinds, with alum and tartar, are added. Rum is diluted with water, and the flavour and colour are kept up by the addition of cayenne and burned sugar. For champagne gooseberry and other inferior wines are often substituted. Port is manufactured from red Cape and other inferior wines, the body, flavour, strength, and colour being produced by gum dragon, the washings of brandy casks, and a preparation of German bilberries. Cheap brown sherry is mixed with Cape and other low-priced brandies, and is flavoured with the washings of brandy casks, sugar-candy, and bitter almonds. Pale sherries are produced by gypsum, by a process called plastering, which removes the natural acids as well as the colour of the wine. Other wines are adulterated with elderberry, logwood, Brazil-wood, cudbear, red beetroot, &c., for colour; with lime or carbonate of lime, carbonate of soda, carbonate of potash, and litharge, to correct acidity; with catechu, sloe-leaves, and oak-bark for astringency; with sulphate of lime and alum for removing colour; with cane-sugar for giving sweetness and body; with alcohol for fortifying; and with ether, especially acetic ether, for giving bouquet and flavour.—Medicines, such as jalap, opium, rhubarb, chinchona bark, scammony, aloes, sarsaparilla, squills, &c., are mixed with various foreign substances. Castor-oil has been adulterated with other oils; and inferior oils are often mixed with cod-liver oil. Cantharides are often mixed with golden-beetle and also artificially-coloured glass.—The adulteration of seeds is largely practised also, the seed which forms the adulterant being of course of the most worthless kind that can be had. Thus turnip-seed is mixed with rape, wild mustard, or charlock, which are steamed and kiln-dried to destroy their vitality, so as to evade detection in the progress of growth; old and useless turnip-seed is also used

ADULTERY — ADVERTISEMENT.

fraudulently mixed with fresh seeds. Clover is also much mixed with plantain and mere weeds.—Acts against adulteration have been passed in various countries and at various times. In Britain there was a law against it as early as 1267.

Adul'tery, the voluntary sexual intercourse of a married person with any other than the offender's husband or wife; when committed between two married persons, the offence is called double, and when between a married and single person, single adultery. The Mosaic, Greek, and early Roman law only recognized the offence when a married woman was the offender. By the Jewish law it was punished with death. In Greece the laws against it were severe. By the laws of Draco and Solon adulterers, when caught in the act, were at the mercy of the injured party. In early Rome the punishment was left to the discretion of the husband and parents of the adulteress. The punishment assigned by the Lex Julia, under Augustus, was banishment or a heavy fine. Under Constantius and Constans, adulterers were burned or sewed in sacks and thrown into the sea; under Justinian the wife was to be scourged, lose her dower, and be shut up in a monastery; at the expiration of two years the husband might take her again; if he refused she was shaven and made a nun for life. By the ancient laws of France this crime was punishable with death. In Spain personal mutilation was frequently the punishment adopted. In several European countries adultery is regarded as a criminal offence, but in none does the punishment exceed imprisonment for a short period, accompanied by a fine. In England formerly it was punishable with fine and imprisonment, and in Scotland it was frequently made a capital offence. In Great Britain at the present day, however, it is punishable only by ecclesiastical censure. The aggrieved husband, however, can obtain damages against his wife's seducer. A man can obtain a dissolution of his marriage on the ground of his wife's adultery, and a wife can obtain a judicial separation on the ground of her husband's adultery, or a dissolution of the marriage if the offence is coupled with cruelty, desertion, or bigamy. In Scotland it is not necessary to prove cruelty. In the United States the punishment of adultery has varied materially at different times. It is, however, very seldom punished criminally in the States.

Ad valo'rem (Lat., according to the value), a term applied to customs or duties levied according to the worth of the goods, as sworn to by the owner, and not according to number, weight, measure, &c.

Advance-note, a draft on the owner of a vessel, generally for one month's wages, given by the master to the sailors on their signing the articles of agreement. The granting of such notes to British sailors was made illegal by an act passed in 1880.

Ad'vent (Latin *adventus*, an arrival, 'the coming of our Saviour'), the name applied to the holy season which occupies the four or, according to the Greek Church, six weeks preceding Christmas, and which forms the first portion of the ecclesiastical year, as observed by the Anglican, the R. Catholic and the Greek Church.

Ad'ventists, a small religious sect of the United States, who believe in the speedy coming of Christ, and generally practise adult immersion.—There is also a sect called *Seventh-day Adventists*, who hold that the coming of Christ is at hand, and maintain that the Sabbath is still the seventh day of the week.

Ad'verb, one of the parts of speech used to limit or qualify the signification of an adjective, verb, or other adverb; as, *very cold, naturally brave, much more clearly, readily agreed*. Adverbs may be classified as follows:—1, adverbs of time, as, *now, then, never*, &c.; 2, of place, as, *here, there, where*, &c.; 3, of degree, as, *very, much, nearly, almost*, &c.; 4, of affirmation, negation, or doubt, as, *yes, no, certainly, perhaps*, &c.; 5, of manner, as, *well, badly, clearly*, &c.

Adver'tisement, a notice given to individuals or the public of some fact, the announcement of which may affect either the interest of the advertiser or that of the parties addressed. The vehicle employed is generally special bills or placards and notices inserted in newspapers and periodicals, and the profit derivable from advertisements forms the main support of the newspaper press. Advertising has grown to a surprising extent, and is still growing, not only in the newspapers, but in boats, railway cars, and public buildings, on fences, rocks, and trees. The city papers are now of eight, twelve, sometimes twenty-four or more pages, of which more than half the space is occupied by advertisements. The extent and seeming extravagance of American advertising is astonishing to Europeans.

Ad'vocate (L. *advocatus*—*ad*, to, *voco*, to call), a lawyer authorized to plead the cause of his clients before a court of law. It is only in Scotland that this word seems to denote a distinct class belonging to the legal profession, the advocates of Scotland being the pleaders before the supreme courts, and corresponding to the *barristers* of England and Ireland. These advocates all belong to the *Faculty of Advocates*, Edinburgh, to whom the oral pleadings in the Court of Session is for the most part limited, while they are also competent to plead in all the inferior Scottish courts and in the House of Lords in cases of appeal from the Court of Session. The supreme judges in Scotland, as well as the sheriffs of the various counties, are always selected from among them. Candidates for admission must undergo two separate examinations, one in general scholarship and the other in law.—The *Lord Advocate*, called also the *King's* or *Queen's Advocate*, is the principal law officer of the crown in Scotland. He is the public prosecutor of crimes in the Supreme Court, and senior counsel for the crown in civil causes. Being appointed by the crown, he goes out of office with the administration to which he belongs. As public prosecutor he is assisted by the solicitor-general and by four junior counsel called advocates-depute. In the United States an advocate is usually termed a counsel, counsellor, or attorney-at-law.

Advocates, FACULTY OF. See *Advocate*.

Advocates' Library, the chief library in Scotland, located in Edinburgh, and founded about 1682 by the Faculty of Advocates. It was increased by donations and by sums granted by the faculty from time to time. As the donations were not confined to advocates the library was considered a kind of public library, and it has continued to retain this character. In 1709 it obtained, along with eight other libraries, the right to a copy of every new book published in Britain, which right it still possesses. The number of volumes is over 265,000 and MSS. over 3000.

Advoca'tus Diab'oli (Devil's advocate), in the Roman Catholic Church, a functionary who, when a deceased person is proposed for canonization, brings forward and insists upon all the weak points of the character and life of the deceased, endeavouring to show that he is not worthy of sainthood. The opposite side is taken by the *Advocatus Dei*, God's advocate.

Advow'son, in English law, a right of presentation to a vacant benefice, or, in other words, a right of nominating a person to officiate in a vacant church. Those who have this right are styled *patrons*. Advowsons are of three kinds—*presentative*, *collative*, and *donative*: *presentative*, when the patron presents his clerk to the bishop of the diocese to be instituted; *collative*, when the bishop is the patron, and institutes or *collates* his clerk by a single act; *donative*, when a church is founded by the king, or any person licensed by him, without being subject to the ordinary, so that the patron confers the benefice on his clerk without presentation, institution, or induction.

Ad'ytum, a secret place of retirement in the ancient temples, esteemed the most sacred spot; the innermost sanctuary or shrine. From this place the oracles were given, and none but the priests were permitted to enter it. The Holy of Holies or Sanctum Sanctorum of the Temple at Jerusalem was of a similar character.

Adze, a cutting instrument used for chipping the surface of timber, somewhat of a mattock shape, and having a blade of steel forming a portion of a cylindrical surface, with a cutting edge at right angles to the length of the handle.

Ædiles (ē'dīlz), Roman magistrates who had the supervision of the national games and spectacles; of the public edifices, such as temples (the name comes from *ædes*, a temple); of private buildings, of the markets, cleansing and draining the city, &c.

Æ'dui, one of the most powerful nations of Gaul, between the Liger (Loire) and the Arar (Saône). On the arrival of Julius Cæsar in Gaul (B.C. 58) they were subject to Ariovistus, but their independence was restored by Cæsar. Their chief town was Bibracte (Autun).

Ægade'an Islands, a group of small islands lying off the western extremity of Sicily, and consisting of Maritimo, Favignana, Levanzo, and Le Formiche.

Ægag'rus, a wild species of ibex (*Capra ægagrus*), found in troops on the Caucasus, and many Asiatic mountains, believed to be the original source of at least one variety of the domestic goat.

Ægean Sea (ē-jē'an), that part of the Mediterranean which washes the eastern shores of Greece, the southern coast of Turkey, and the western coast of Asia Minor. See *Archipelago*.

Æ'gilops, a genus of grasses, very closely

allied to wheat, and somewhat remarkable from the alleged fact that by cultivation one of the species becomes a kind of wheat.

Ægina (ē-jī'na), a Greek island in the Gulf of Ægina, south of Athens, triangular in form; area about 32 square miles; pop. 7000. Except in the west, where the surface is more level, the island is mountainous and unproductive. The inhabitants are chiefly engaged in trade, seafaring, and agriculture, the chief crops being almonds, olives, and grain. The greater number of them reside in the seaport town of Ægina. Ægina was anciently colonized by Dorians from the opposite coast of Peloponnesus. In the latter half of the sixth century B.C. it had a flourishing commerce, a large navy, and was the seat of a distinct school of art. At the battle of Salamis (480 B.C.) the Æginetans behaved with great valour. In 456 the island fell under the power of the Athenians, and in 431 the Æginetans were expelled to make room for Athenian settlers, but were afterwards restored. On a hill are the remains of a splendid temple of Athena (Minerva), many of the columns of which are still standing. Here were found in 1811 a number of marble statues (the *Æginetan marbles*), which are now at Munich, and are prized as throwing light on the early history of Greek art. Though in these figures there is a wonderfully exact imitation of nature, yet there is a certain stiffness about them and an unnatural sameness of expression in all. They should probably be assigned to the period 500-480 B.C.

Ægis (ē'jis), the shield of Zeus, according to Homer, but according to later writers and artists a metal cuirass or breastplate, in which was set the head of the Gorgon Medusa, and with which Athena (Minerva) is often figured as being protected. In a figurative sense the word is used to denote some shielding or protecting power.

Ægle (ē'glē), a genus of plants. See *Bel*.

Ægospot'ami ('goat-rivers'), a place on the Hellespont, of some note in Greek history, the Athenian fleet being here completely defeated in 405 B.C. by the Spartan Lysander, thus ending the Peloponnesian war.

Ælfric (al'frik), ABBOT, called *Grammaticus* (the grammarian), was a celebrated English author of the eleventh century. He became a monk of Abingdon, was afterwards connected with Winchester, and died Abbot of Ensham. His principal works are two

books of homilies, a Treatise on the Old and New Testaments, a translation and abridgment of the first seven books of the Bible, a Latin Grammar and Glossary, &c. He has been frequently confounded both with Ælfric, Archbishop of Canterbury, and Ælfric, Archbishop of York, who lived about the same time.

Ælia'nus, CLAUDIUS, often called simply ÆLIAN, a Roman author who lived about A.D. 221, and wrote in Greek a collection of stories and anecdotes and a natural history of animals.

Aelst (älst), Belgian town, same as *Alost*.

Æne'as, the hero of Virgil's *Æneid*, a Trojan, who, according to Homer, was, next to Hector, the bravest of the warriors of Troy. When that town was taken and set on fire, Æneas, according to the narrative of Virgil, with his father, son, and wife Creusa, fled, but the latter was lost in the confusion of the flight. Having collected a fleet he sailed for Italy, but after numerous adventures he was driven by a tempest on the coast of Africa, where Queen Dido of Carthage received him kindly, and would have married him. Jupiter, however, sent Mercury to Æneas, and commanded him to sail for Italy. Whilst the deserted Dido ended her life on the funeral pile Æneas set sail with his companions, and after further adventures by land and sea reached the country of King Latinus, in Italy. The king's daughter Lavinia was destined by an oracle to a stranger, this stranger being Æneas, but was promised by her mother to Turnus, king of the Rutūli. This occasioned a war, after the termination of which, Turnus having fallen by his hand, Æneas married Lavinia. His son by Lavinia, Æneas Sylvius, was the ancestor of the kings of Alba Longa, and of Romulus and Remus, the founders of the city of Rome.

Æolian Harp; or ÆOLUS' HARP, a musical instrument, generally consisting of a box of thin fibrous wood (often of deal), to which are attached from eight to fifteen fine catgut strings or wires, stretched on low bridges at each end, and tuned in unison. Its length is made to correspond with the size of the window or other aperture in which it is intended to be placed. When the wind blows athwart the strings it produces very beautiful sounds, sweetly mingling all the harmonic tones, and swelling or diminishing according to the strength or weakness of the blast.

Æolians (Gr. *Aioleis*), one of the four

racés into which the ancient Greeks were divided, originally inhabiting the district of Æolis, in Thessaly, from which they spread over other parts of Greece. In early times they were the most numerous and powerful of the Hellenic races, chiefly inhabiting Northern Greece and the western side of Peloponnesus, though latterly a portion of them went to Lesbos and Tenedos and the north-west shores of Asia Minor, where they possessed a number of cities. Their language, the Æolian dialect, was one of the three principal dialects of the Greek. It was cultivated for literary purposes chiefly at Lesbos, and was the dialect in which Alcæus and Sappho wrote.

Æol'ipile (L. *Æolipila*, the ball of Æolus), a spherical vessel of metal, with a pipe of small aperture, through which the vapour of heated water in the ball passes out with considerable noise; or having two nozzles so placed that the steam rushing out causes it to revolve on the principle of the Barker's mill. It was known to the ancient Greeks.

Æ'olus, in Greek mythology, the god of the winds, which he kept confined in a cave in the Æolian Islands, releasing them when he wished or was commanded by the superior gods.

Æ'on, a Greek word signifying life, an age, and sometimes eternity, but used by the Gnostics to express spirits or powers that had emanated from the Supreme Mind before the beginning of time. They held both Christ and the Holy Spirit to be æons; but as they denied the divine origin of the books of Moses, they said that the spirit which had inspired him and the prophets was not that exalted æon whom God sent forth after the ascension of Christ, but an æon very much inferior, and removed at a great distance from the Supreme Being.

Æpyor'nis, a genus of gigantic birds whose remains have been found in Madagascar, where it is supposed to have lived perhaps not longer than 200 years ago. It had three toes, and is classed with the cursorial birds (ostrich, &c.). Its eggs measured 14 inches in length, being about six times the bulk of those of the ostrich. The bird which laid them may well have been the roc of Eastern tradition.

Æ'qui, an ancient people of Italy, conspicuous in the early wars of Rome, and inhabiting the mountain district between the upper valley of the Anio (Teverone) and Lake Fucinus. They were probably akin to the Volscians, with whom they were in

constant alliance. They were defeated by Cincinnatus in B.C. 458, and again by the dictator Postumus Tubertus in B.C. 428, and were finally subdued about B.C. 304–302. Soon after they were admitted to Roman citizenship.

A'ërated Bread, bread which receives its sponginess or porosity from carbonic acid supplied artificially, and not produced by the fermentation caused by leaven or yeast.

A'ërated Waters, waters impregnated with carbonic acid gas, and forming effervescing beverages. Some mineral waters are naturally aërated, as Vichy, Apollinaris, Rosbach, &c.; others especially, such as are used for medicinal purposes, are frequently aërated to render them more palatable and exhilarating. Water simply aërated, or aërated and flavoured with lemonade or fruit syrups, is largely used, especially in summer, as a refreshing beverage. There are numerous varieties of apparatus for manufacturing aërated waters. An easily-worked, portable apparatus, called a gazogene, can now be readily procured, in which these waters can be cheaply produced at home, the gas being generated by bicarbonate of soda and tartaric acid. The essential parts of an aërated-water machine are a generator, in which the gas is produced, a vessel containing the water to be impregnated, and an apparatus for forcing the gas into the water. This last may be effected by force-pumps or by the high pressure of the impregnating gas itself. The quantity of gas with which the water is charged is usually equal to a pressure of 5 atmospheres.

Æ'rians, the followers of Aërius, who in the fourth century originated a small heretical sect, objecting to the established feasts, the distinction between bishops and presbyters, prayers for the dead, &c.

Aërodynam'ics, a branch of physical science, which treats of the properties and motions of elastic fluids (air, gases), and of the appliances by which these are exemplified. This subject is often explained in connection with hydrodynamics.

Aerøe, or **Arrøe** (är'en-e), an island of Denmark, in the Little Belt, 15 miles long by 5 broad, with 12,000 inhabitants. Though hilly, it is very fertile.

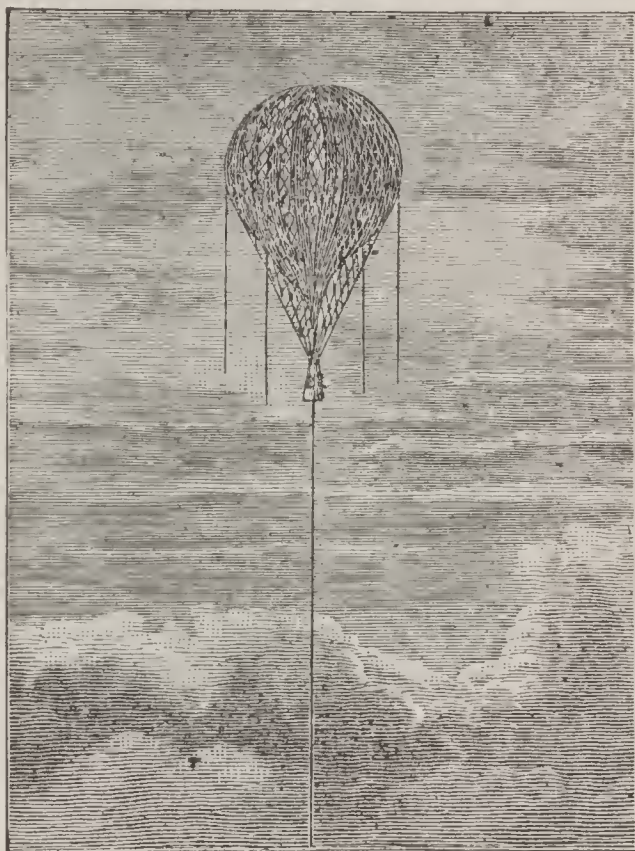
A'ërolite, a meteoric stone, meteorite, or shooting-star. See *Meteoric Stones*.

Aëronau'tics, the art of sailing in or navigating the air. The first form in which the idea of aërial locomotion naturally suggested itself was that of providing men with wings

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by which they should be enabled to fly. It is now, however, the general opinion of scientific men that it is impossible for man by his muscular strength alone to give motion to wings of sufficient extent to keep him suspended in the air. But although the muscles of man may be of insufficient strength to enable him to use such wings, there yet remains the possibility of making a flying car, elevated and propelled by machinery, or a boat to float in the air. From time to time many large machines have been planned and constructed with the intention of giving their occupants the power of navigating the atmosphere at pleasure as the sea is navigated by ships; but hitherto all have failed owing to the impracticability of supporting in mid-air a sufficient weight of machinery to provide the necessary power for propelling and steering purposes. The navigation of the air by means of the balloon dates only from nearly the close of the eighteenth century. In 1766 Henry Cavendish showed that hydrogen gas was at least seven times lighter than ordinary air, and it at once occurred to Dr. Black of Edinburgh that a thin bag filled with this gas would rise in the air, but his experiments were for some reason unsuccessful. Some years afterwards Tiberius Cavallo found that a bladder was too heavy and paper too porous, but in 1782 he succeeded in elevating soap-bubbles by inflating them with hydrogen gas. In this and the following year two Frenchmen, the brothers Stephen and Joseph Montgolfier, acting on the observation of the suspension of clouds in the atmosphere and the ascent of smoke, were able to cause several bags to ascend by rarefying the air within them by means of a fire below. These experiments roused much attention at Paris; and soon after a balloon was constructed under the superintendence of Professor Charles, which being inflated with hydrogen gas rose over 3000 feet in two minutes, disappeared in the clouds, and fell after three quarters of an hour about 15 miles from Paris. These Montgolfier and Charles balloons already represented the two distinct principles in respect to the source of elevating power, the one being inflated with common air rarefied by heat, requiring a fire to keep up the rarefaction, the other being filled with gas lighter at a common temperature than air, and thus rendered permanently buoyant. Both forms were used for a considerable time, but the greater safety and convenience of the gaseous inflation finally prevailed. After the use of

coal-gas had been introduced it superseded hydrogen gas, as being much less expensive, though having a far less elevating power. The first person who made an ascent in a balloon was Pilâtre de Rozier, who ascended 50 feet at Paris in 1783 in one of Montgolfier's. A short time afterwards M. Charles and M. Robert ascended in a balloon inflated with hydrogen gas, and travelled a distance of 27 miles from the Tuileries; M. Charles by himself also ascended to a height of



Balloon above the Clouds.

about 2 miles. Since then many ascents have been made, with, strange to say, comparatively few disastrous results. Among the names of the earlier balloonists we may mention Lunardi, who first made an ascent in Great Britain (Sept. 1784), unless we assign this honour to J. Tytler ('Balloon' Tytler), who seems to have made two short ascents from Edinburgh in the preceding month; Blanchard, who, along with the American Dr. Jeffries, first crossed the Channel from Dover to Calais, in Jan. 1785; Garnerin, who first descended by a parachute from a balloon in Oct. 1797; and Gay Lussac, who reached the height of 23,000 feet in Sept. 1804. In 1836 a balloon carrying Messrs. Green, Holland, and Mason traversed the 500 miles between London and Weilburg in Nassau in eighteen hours. In

1859 Mr. J. Wise, the chief of American aëronauts, accompanied by several others, rose from New York, and landed, after a flight of 1150 miles, in twenty hours. In Sept. 1862, the renowned aëronaut, Mr. Glaisher, accompanied by Mr. Coxwell, made an ascent from Wolverhampton, and reached the elevation of 37,000 feet, or 7 miles, which far exceeds the height hitherto attained by any other aërial voyagers. But the daring excursionists were for a time in great peril, Mr. Glaisher having been insensible for seven minutes, and Mr. Coxwell having his hands so severely frozen that he was unable to pull the valve for descent with them, and was compelled to use his teeth.—All the features of the balloon as now used are more or less due to Professor Charles, already mentioned. The



Balloon Car of Coxwell and Glaisher.

balloon is a large pear-shaped bag, made of pliable silk cloth, covered with a varnish of caoutchouc dissolved in oil of turpentine to render it air-tight. The ordinary size of the bag ranges from 20 to 30 feet in equatorial diameter, with a proportionate height, but a balloon of 100 feet in diameter and 130 feet in height has been constructed. A car, generally of wicker-work, supported by a net-work which extends over the balloon, contains the aëronaut; and a valve, usually placed at the top, to which is attached a string reaching the car, gives him the power of allowing the gas to escape, whereby the balloon is lowered at pleasure. The problem of how to steer or propel a balloon in a desired horizontal direction can scarcely be said to have been satisfactorily solved. Balloons of a fish or cigar shape, floated by gas, propelled by a screw driven by a dynamo-electric machine, and steered by a large rudder, made several ascents in Paris in 1884 and 1885, and it is claimed

for them that they have settled the question of the practicability of aërial navigation, but this seems doubtful.—Balloons have been used for taking both meteorological and military observations with considerable success. During the siege of Paris in 1870–71 over sixty persons (including Gambetta) and innumerable letters left the city in balloons.

Aërostatic Press, a simple contrivance for rendering the pressure of the atmosphere available for extracting the colouring matter from dye-woods and similar purposes. A horizontal partition divides the machine into two parts. The lower part is connected with an air-pump, by means of which the air can be withdrawn from it. The matter from which the substance is to be extracted is laid upon the partition, which is perforated, and a perforated cover is placed over it. Upon this the liquid intended to form the extract is poured, and, the pump being worked, the air is extracted from the lower vessel and by the pressure of the atmosphere the liquid is forced through the intervening mass, carrying the colour or other soluble matter with it.

Aërostat'ics, that branch of physics which treats of the weight, pressure, and equilibrium of air and gases. See *Air*, *Air-pump*, *Barometer*, *Gas*, &c.

Æschines (ēs'ki-nēz), a celebrated Athenian orator, the rival and opponent of Demosthenes, was born 390 B.C. and died in 314. He headed the Macedonian party in Greece, or those in favour of an alliance with Philip, while Demosthenes took the opposite side. Having failed in B.C. 330 in a prosecution against Ctesiphon for proposing to bestow a crown of gold upon Demosthenes for his services to the state (whence the oration of Demosthenes *On the Crown*) he withdrew from Athens. Latterly he established a school of eloquence at Rhodes. Three of his orations are extant.

Æschylus (ēs'ki-lus), the first in time of the three great tragic poets of Greece, born at Eleusis, in Attica, B.C. 525, died in Sicily 456. Before he gained distinction as a dramatist he had highly distinguished himself at the battle of Marathon (490), as he afterwards did at Artemisium, Salamis, and Plataea. He first gained the prize for tragedy in B.C. 484. The Persians, the earliest of his extant pieces, formed part of a trilogy which gained the prize in B.C. 472. In B.C. 468 he was defeated by Sophocles, and then is said to have gone to the court

of Hiero, king of Syracuse. Altogether he is reputed to have composed seventy tragedies and gained thirteen triumphs. Only seven of his tragedies are extant: the Persians, Seven against Thebes, Suppliants, Prometheus, Agamemnon, Choephoroi, and Eumenides, the last three forming a trilogy on the story of Orestes, represented in B.C. 458. Æschylus may be called the creator of Greek tragedy, both from the splendour of his dramatic writings, and from the scenic improvements and accessories he introduced. Till his time only one actor had appeared on the stage at a time, and by bringing on a second he was really the founder of dramatic dialogue. His style was grand, daring, and full of energy, though sometimes erring in excessive splendour of diction and imagery, if not indeed harsh or turgid. His plays have little or no plot, and his characters are drawn by a few powerful strokes. There are English poetical translations of his plays by Blackie, Plumptre, and Swanwick.

Æscula'pius (Gr. *Asklēpios*), the god of medicine among the Greeks and latterly adopted by the Romans, usually said to have been a son of Apollo. He was worshipped in particular at Epidaurus, in Peloponnesus, where a temple with a grove was dedicated to him. The sick who visited his temple had to spend one or more nights in the sanctuary, after which the remedies to be used were revealed in a dream. Those who were cured offered a sacrifice to Æsculapius, commonly a cock. He is often represented with a large beard, holding a knotty staff, round which is entwined a serpent, the serpent being specially his symbol. Near him often stands a cock. Sometimes Æsculapius is represented under the image of a serpent only.

Æs'culus, the genus of plants to which belongs the horse-chestnut.

Æ'sop, the Greek fabulist, is said to have been a contemporary of Cræsus and Solon, and thus probably lived about the middle of the sixth century B.C. But so little is known of his life that his existence has been called in question. He is said to have been originally a slave, and to have received his freedom from a Samian master, Iadmon. He then visited the court of Cræsus, and is also said to have visited Pisistratus at Athens. Finally he was sent by Cræsus to Delphi to distribute a sum of money to each of the citizens. For some reason he refused to distribute the money, whereupon

the Delphians, enraged, threw him from a precipice, and killed him. No works of Æsop are extant, and it is doubtful whether he wrote any. Bentley inclined to the supposition that his fables were delivered orally and perpetuated by repetition. Such fables are spoken of both by Aristophanes and Plato. Phædrus turned into Latin verse the Æsopian fables current in his day, with additions of his own. In modern times several collections purporting to be Æsop's fables have been published.

Æsthet'ics (Gr. *aisthētikos*, pertaining to perception), the philosophy of the beautiful; the name given to the branch of philosophy or of science which is concerned with that class of emotions, or with those attributes, real or apparent, of objects generally comprehended under the term *beauty*, and other related expressions. The term æsthetics first received this application from Baumgarten (1714–1762), a German philosopher, who was the first modern writer to treat systematically on the subject, though the beautiful had received attention at the hands of philosophers from early times. Socrates, according to Xenophon, regarded the beautiful as coincident with the good, and both as resolvable into the useful. Plato, in accordance with his idealistic theory, held the existence of an absolute beauty, which is the ground of beauty in all things. He also asserted the intimate union of the good, the beautiful, and the true. Aristotle treated of the subject in much more detail than Plato, but chiefly from the scientific or critical point of view. In his treatises on Poetry and Rhetoric he lays down a theory of art, and establishes principles of beauty. His philosophical views were in many respects opposed to those of Plato. He does not admit an absolute conception of the beautiful; but he distinguishes beauty from the good, the useful, the fit, and the necessary. He resolves beauty into certain elements, as order, symmetry, definiteness. A distinction of beauty, according to him, is the absence of lust or desire in the pleasure it excites. Beauty has no utilitarian or ethical object; the aim of art is merely to give immediate pleasure; its essence is imitation. Plotinus agrees with Plato, and disagrees with Aristotle, in holding that beauty may subsist in single and simple objects, and consequently in restoring the absolute conception of beauty. He differs from Plato and Aristotle in raising art above nature.

Baumgarten's treatment of æsthetics is essentially Platonic. He made the division of philosophy into logic, ethics, and æsthetics; the first dealing with knowledge, the second with action (will and desire), the third with beauty. He limits æsthetics to the conceptions derived from the senses, and makes them consist in confused or obscured conceptions, in contradistinction to logical knowledge, which consists in clear conceptions. Kant defines beauty in reference to his four categories, quantity, quality, relation, and modality. In accordance with the subjective character of his system he denies an absolute conception of beauty, but his detailed treatment of the subject is inconsistent with the denial. Thus he attributes a beauty to single colours and tones, not on any plea of complexity, but on the ground of purity. He holds also that the highest meaning of beauty is to symbolize moral good, and arbitrarily attaches moral characters to the seven primary colours. The value of art is mediate, and the beauty of art is inferior to that of nature. The treatment of beauty in the systems of Schelling and Hegel could with difficulty be made comprehensible without a detailed reference to the principles of these remarkable speculations. English writers on beauty are numerous, but they rarely ascend to the heights of German speculation. Shaftesbury adopted the notion that beauty is perceived by a special internal sense; in which he was followed by Hutcheson, who held that beauty existed only in the perceiving mind, and not in the object. Numerous English writers, among whom the principal are Alison and Jeffrey, have supported the theory that the source of beauty is to be found in association—a theory analogous to that which places morality in sympathy. The ability of its supporters gave this view a temporary popularity, but its baselessness has been effectively exposed by successive critics. Dugald Stewart attempted to show that there is no common quality in the beautiful beyond that of producing a certain refined pleasure; and Bain agrees with this criticism, but endeavours to restrict the beautiful within a group of emotions chiefly excited by association or combination of simpler elementary feelings. Herbert Spencer has a theory of beauty which is subservient to the theory of evolution. He makes beauty consist in the play of the higher powers of perception and emotion, defined as an activity not directly subser-

vient to any processes conducive to life, but being gratifications sought for themselves alone. He classifies æsthetic pleasures according to the complexity of the emotions excited, or the number of powers duly exercised; and he attributes the depth and apparent vagueness of musical emotions to associations with vocal tones built up during vast ages. Among numerous writers who have made valuable contributions to the scientific discussion of æsthetics may be mentioned Winckelmann, Lessing, Richter, the Schlegels, Gervinus, Helmholtz, and Ruskin.

Æstiva'tion, a botanical term applied to the arrangement of the parts of a flower in the flower-bud previous to the opening of the bud.—The term is also applied to the summer sleep of animals. See *Dormant State*.

Æth'eling. See *Atheling*.

Æ'ther. See *Ether*.

Æthio'pia. See *Ethiopia*.

Æ'thrioscope (Gr. *aithrios*, clear, cloudless), an instrument for measuring radiation towards a clear sky, consisting of a metallic cup with a highly-polished interior of paraboloid shape, in the focus of which is placed one bulb of a differential thermometer, the other being outside. The inside bulb at once begins to radiate heat when exposed to a clear sky, and the extent to which this takes place is shown by the scale of the thermometer. The æthrioscope also indicates the presence of invisible aqueous vapour in the atmosphere, radiation being less than when the air is dry.

Æthu'sa, a genus of umbelliferous plants. See *Fool's Parsley*.

Æt'ius, a general of the western Roman Empire, born A.D. 396; murdered 454. As commander in the reign of Valentinian III. he defended the empire against the Huns, Visigoths, Franks, Burgundians, &c., completely defeating the first in particular under Attila in a great battle at Châlons in 451. For twenty years he was at the head of public affairs, and latterly was murdered by Valentinian from jealousy of his power.

Æt'na. See *Etna*.

Æto'lia, a western division of northern Greece, separated on the west by the Achelous from Acarnania and washed by the Corinthian Gulf on the south. The inhabitants are little heard of in Greek history till the Peloponnesian war, at which time they were notorious among the Greeks for the rudeness of their manners. Ætolia,

in conjunction with Acarnania, now forms a nomarchy of the kingdom of Greece.

Affida'vit, a written statement of facts upon oath or affirmation. Affidavits are generally made use of when evidence is to be laid before a judge or a court, while evidence brought before a jury is delivered orally. The person making the affidavit signs his name at the bottom of it, and swears that the statements contained in it are true. The affidavit may be sworn to in open court, or before a magistrate, notary public or other duly qualified person.

Affin'ity, in chemistry, the force by which unlike kinds of matter combine so intimately that the properties of the constituents are lost, and a compound with new properties is produced. Of the force itself we know little or nothing. It is not the same under all conditions, being very much modified by circumstances, especially temperature. The usual effect of increase of temperature is to diminish affinity and ultimately to cause the separation of a compound into its constituents; and there is probably for every compound a temperature above which it could not exist but would be broken up. Where two elements combine to form a compound heat is almost always evolved, and the amount evolved serves as a measure of the affinity. In order that chemical affinity may come into play it is necessary that the substances should be in contact, and usually one of them at least is a fluid or a gas. The results produced by chemical combination are endlessly varied. Colour, taste, and smell are changed, destroyed, or created; harmless constituents produce strong poisons, strong poisons produce harmless compounds.

Affinity, in law, is that degree of connection which subsists between one of two married persons and the blood relations of the other. It is no real kindred (consanguinity). A person cannot, by legal succession, receive an inheritance from a relation by affinity; neither does it extend to the nearest relations of husband and wife so as to create a mutual relation between them. The degrees of affinity are computed in the same way as those of consanguinity or blood. All legal impediments arising from affinity cease upon the death of the husband or wife, excepting those which relate to the marriage of the survivor.

Affirma'tion, a solemn declaration by Quakers and others, who object to taking an oath, in confirmation of their testimony

in courts of law, or of their statements on other occasions on which the sanction of an oath is required of other persons. In England the form for Quakers is, 'I do solemnly, sincerely, and truly declare and affirm.' Affirmation is generally allowed to be substituted for an oath in all cases where a person refuses to take an oath from conscientious motives, if the judge is satisfied that the motives are conscientious. False affirmation is subjected to the same penalties as perjury.

Affrique (âf-rĕk), St., a town of southern France, department of Aveyron. Pop. 5364.

Afghanistan (âf găn'i-stăn), that is, the land of the Afghans, a country in Asia, bounded on the east by Kashmir and the Punjab, on the south by Beluchistan, on the west by the Persian province of Khorasan, and on the north by Bokhara and Russian Turkestan. In part the boundaries are not well defined, but recently that from the Oxus to the Persian frontier has been surveyed and marked by boundary stones by a joint Russian and British commission. The area may be set down at about 280,000 sq. miles. The population is estimated at between 5,000,000 and 6,000,000. Afghanistan consists chiefly of lofty, bare, uninhabited table-lands, sandy barren plains, ranges of snow-covered mountains, offsets of the Hindu Kush or the Himalayas, and deep ravines and valleys. Many of the last are well watered and very fertile, but about four-fifths of the whole surface is rocky, mountainous, and unproductive. The surface on the north-east is covered with lofty ranges belonging to the Hindu Kush, whose heights are often 18,000 and sometimes reach perhaps 25,000 feet. The whole north-eastern portion of the country has a general elevation of over 6000 feet; but towards the south-west, in which direction the principal mountain chains of the interior run, the general elevation declines to not more than 1600 feet. In the interior the mountains sometimes reach the height of 15,000 ft. Great part of the frontier towards India consists of the Suleiman range, 12,000 feet high. There are numerous practicable avenues of communication between Afghanistan and India, among the most extensively used being the famous Khyber Pass, by which the river Cabul enters the Punjab; the Gomul Pass, also leading to the Punjab; and the Bolan Pass on the south, through which the route passes to Sind. Of the rivers the largest is the

AFGHANISTAN.

Helmund, which flows in a south-westerly direction more than 400 miles, till it enters the Hamoon or Seistan swamp. It receives the Arghandab, a considerable stream. Next in importance are the Cabul in the north-east, which drains to the Indus, and the Hari Rud in the north-west, which, like other Afghan streams, loses itself in the sand. The climate is extremely cold in the higher, and intensely hot in the lower regions, yet on the whole it is salubrious.

The most common trees are pines, oaks, birch, and walnut. In the valleys fruits, in the greatest variety and abundance, grow wild. The principal crops are wheat, forming the staple food of the people; barley, rice, and maize. Other crops are tobacco, sugar-cane, and cotton. The chief domestic animals are the dromedary, the horse, ass, and mule, the ox, sheep with large fine fleeces and enormous fat tails, and goats; of wild animals there are the tiger, bears, leopards, wolves, jackal, hyæna, foxes, &c. The chief towns are Cabul (the capital), Kandahar, Ghuzni, and Herat. The inhabitants belong to different races, but the Afghans proper form the great mass of the people. They are allied in blood to the Persians, and are divided into a number of tribes, among which the Duranis and Ghiljis are the most important. The Afghans are bold, hardy, and warlike, fond of freedom and resolute in maintaining it, but of a restless, turbulent temper, and much given to plunder. Tribal dissensions are constantly in existence, and seldom or never do all the Afghans pay allegiance to the nominal ruler of their country. Their lan-

guage is distinct from the Persian, though it contains a great number of Persian words, and is written, like the Persian, with the Arabic characters. In religion they are Mohammedans of the Sunnite sect.

The history of Afghanistan belongs almost to modern times. The collective name of the country itself is of modern and external origin (Persian). In 1738 the country was conquered by the Persians under Nadir

Shah. On his death in 1747 Ahmed Shah, one of his generals, obtained the sovereignty of Afghanistan, and became the founder of a dynasty, which lasted about eighty years. At the end of that time Dost Mohammed, the ruler of Cabul, had acquired a preponderating influence in the country. On account of his dealings with the Russians the British resolved to dethrone him and restore Shah Shuja, a former ruler. In April, 1839, a



Afghans of the Durani Tribe.

British army under Sir John Keane entered Afghanistan, occupied Cabul, and placed Shah Shuja on the throne, a force of 8000 being left to support the new sovereign. Sir W. Macnaghten remained as envoy at Cabul, with Sir Alexander Burnes as assistant envoy. The Afghans soon organized a widespread insurrection, which came to a head on Nov. 2, 1841, when Burnes and a number of British officers, besides women and children, were murdered, Macnaghten being murdered not long after. The other British leaders now made a treaty with the Afghans, at whose head was Akbar, son of Dost Mohammed, agreeing to withdraw the forces from the country, while the Afghans were to furnish them with provisions and escort them

on their way. On 6th January, 1842, the British left Cabul and began their most disastrous retreat. The cold was intense, they had almost no food—for the treacherous Afghans did not fulfil their promises—and day after day they were assailed by bodies of the enemy. By the 13th 26,000 persons, including camp-followers, women and children, were destroyed. Some were kept as prisoners, but only one man, Dr. Brydon, reached Jelalabad, which, as well as Kandahar, was still held by British troops. In a few months General Pollock, with a fresh army from India, retook Cabul and soon finished the war. Shah Shuja having been assassinated, Dost Mohammed again obtained the throne of Cabul, and acquired extensive power in Afghanistan. He joined with the Sikhs against the British, but latterly made an offensive and defensive alliance with the latter. He died in 1863, having nominated his son Shere Ali his successor. Shere Ali entered into friendly relations with the British, but in 1878, having repulsed a British envoy and refused to receive a British mission (a Russian mission being meantime at his court), war was declared against him, and the British troops entered Afghanistan. They met with comparatively little resistance; the ameer fled to Turkestan, where he soon after died; and his son Yakoob Khan having succeeded him concluded a treaty with the British (at Gandamak, May, 1879), in which a certain extension of the British frontier, the control by Britain of the foreign policy of Afghanistan, and the residence of a British envoy in Cabul, were the chief stipulations. The members of the mission were again treacherously attacked and slain, and troops were again sent into the country. Cabul was again occupied, and Kandahar and Ghazni were also relieved; while Yakoob Khan was sent to imprisonment in India. In 1880 Abdur-Rahman, a grandson of Dost Mohammed, was recognized by Britain as emir of the country, and has since been on friendly terms with the British, by whom he is subsidized. Encroachments by the Russians on territory claimed by Afghanistan almost brought about a rupture between Britain and Russia in 1885, and led to the delimitation of the frontier of Afghanistan on the side next the territory now occupied by Russia. In 1897 a punitive expedition was again sent against the tribes around the Khyber pass, who disregarded their pledges.

Afium - Kara - Hissar ('opium-black-castle'), a city of Asiatic Turkey, 170 miles E.S.E. of Constantinople, with manufactures of woollens, and a trade in opium (*afium*), &c. Pop. about 20,000.

Afrag'ola, a town of Italy, about 6 miles N.N.E. of Naples. Pop. 19,149.

Afra'nus, LUCIUS, a Roman comic dramatist who flourished about the beginning of the first century B.C., and of whose writings only fragments remain.

Africa, one of the three great divisions of the Old World, and the second in extent of the five principal continents of the globe, forming a vast peninsula joined to Asia by the Isthmus of Suez. It is of a compact form, with few important projections or indentations, and having therefore a very small extent of coast-line (about 16,000 miles, or much less than that of Europe) in proportion to its area. This continent extends from 37° 20' N. lat. to 34° 50' S. lat., and the extreme points, Cape Blanco and Cape Agulhas, are nearly 5000 miles apart. From west to east, between Cape Verde, lon. 17° 34' W., and Cape Guardafui, lon. 51° 16' E., the distance is about 4600 miles. The area is estimated at 11,500,000 square miles, or more than three times that of Europe. The islands belonging to Africa are not numerous, and, except Madagascar, none of them are large. They include Madeira, the Canaries, Cape Verde Islands, Fernando Po, Prince's Island, St. Thomas, Ascension, St. Helena, Mauritius, Bourbon, the Comoros, Socotra, &c.

The interior of Africa is now well explored, so we know enough of the continent as a whole to be able to point to some general features that characterize it. One of these is that almost all round it at no great distance from the sea, and, roughly speaking, parallel with the coast-line, we find ranges of mountains or elevated lands forming the outer edges of interior plateaux. The most striking feature of Northern Africa is the immense tract known as the Sahara or Great Desert, which is inclosed on the north by the Atlas Mountains (greatest height, 12,000 to 13,000 feet), the plateau of Barbary and that of Barca, on the east by the mountains along the west coast of the Red Sea, on the west by the Atlantic Ocean, and on the south by the Soudan. The Sahara is by no means the sea of sand it has sometimes been represented: it contains elevated plateaux and even mountains radiating in all directions, with habit-

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able valleys between. A considerable nomadic population is scattered over the habitable parts, and in the more favoured regions there are settled communities. The Soudan, which lies to the south of the Sahara, and separates it from the more elevated plateau of Southern Africa, forms a belt of pastoral country across Africa, and includes the countries on the Niger, around Lake Tchad (or Chad), and eastwards to the elevated region of Abyssinia. Southern Africa as a whole is much more fertile and well watered than Northern Africa, though it also has a desert tract of considerable extent (the Kalahari Desert). This division of the continent consists of a table-land, or series of table-lands, of considerable elevation and great diversity of surface, exhibiting hollows filled with great lakes, and terraces over which the rivers break in falls and rapids, as they find their way to the low-lying coast tracts. The mountains which inclose Southern Africa are mostly much higher on the east than on the west, the most northerly of the former being those of Abyssinia, with heights of 10,000 to 14,000 or 16,000 feet, while the eastern edge of the Abyssinian plateau presents a steep unbroken line of 7000 feet in height for many hundred miles. Farther south, and between the great lakes and the Indian Ocean, we find Mounts Kenia and Kilimanjaro (19,500 ft.), the loftiest in Africa, covered with perpetual snow. Of the continuation of this mountain boundary we shall only mention the Drakenberg Mountains, which stretch to the southern extremity of the continent, reaching in Cathkin Peak, Natal, the height of over 10,000 feet. Of the mountains that form the western border the highest are the Cameroon Mountains, which rise to a height of 13,000 feet, at the inner angle of the Gulf of Guinea. The average elevation of the southern plateau is probably from 3000 to 4000 feet.

The Nile is the only great river of Africa which flows to the Mediterranean. It receives its waters primarily from the great lake Victoria Nyanza, which lies under the equator, and in its upper course is fed by tributary streams of great size, but for the last 1200 miles of its course it has not a single affluent. It drains an area of more than 1,000,000 square miles. The Indian Ocean receives numerous rivers; but the only great river of South Africa which enters that ocean is the Zambesi, the fourth in size of the continent, and having in

its course the Victoria Falls, one of the greatest waterfalls in the world. In Southern Africa also, but flowing westward and entering the Atlantic, is the Congo, which takes origin from a series of lakes and marshes in the interior, is fed by great tributaries, and is the first in volume of all the African rivers, carrying to the ocean more water than the Mississippi. Unlike most of the African rivers, the mouth of the Congo forms an estuary. Of the other Atlantic rivers, the Senegal, the Gambia, and the Niger are the largest, the last being third among African streams.

With the exception of Lake Tchad there are no great lakes in the northern division of Africa, whereas in the number and magnificence of its lakes the southern division almost rivals North America. Here are the Victoria and Albert Nyanza, Lakes Tanganyika, Nyassa, Shirwa, Bangweolo, Moero, and other lakes. Of these the Victoria and Albert belong to the basin of the Nile; Tanganyika, Bangweolo, and Moero to that of the Congo; Nyassa, by its affluent the Shiré, to the Zambesi. Lake Tchad on the borders of the northern desert region, and Lake Ngami on the borders of the southern, have a remarkable resemblance in position, and in the fact that both are drained by streams that lose themselves in the sand.

The climate of Africa is mainly influenced by the fact that it lies almost entirely within the tropics. In the equatorial belt, both north and south, rain is abundant and vegetation very luxuriant, dense tropical forests prevailing for about 10° on either side of the line. To the north and south of the equatorial belt the rainfall diminishes, and the forest region is succeeded by an open pastoral and agricultural country. This is followed by the rainless regions of the Sahara on the north and the Kalahari Desert on the south, extending beyond the tropics, and bordering on the agricultural and pastoral countries of the north and south coasts, which lie entirely in the temperate zone. The low coast regions of Africa are almost everywhere unhealthy, the Atlantic coast within the tropics being the most fatal region to Europeans.

Among mineral productions may be mentioned gold, which is found in the rivers of West Africa (hence the name Gold Coast), and in Southern Africa latterly in much abundance; diamonds have been found in large numbers in recent years in the south; iron, copper, lead, tin, and coal are also

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found.—Among plants are the baobab, the date-palm (important as a food plant in the north), the doum-palm, the oil-palm, the wax-palm, the shea-butter tree, trees yielding caoutchouc, the papyrus, the castor-oil plant, indigo, the coffee-plant, heaths with beautiful flowers, aloes, &c. Among cultivated plants are wheat, maize, millet, and other grains, cotton, coffee, cassava, ground-nut, yam, banana, tobacco, various fruits, &c. As regards both plants and animals, northern Africa, adjoining the Mediterranean, is distinguished from the rest of Africa in its great agreement with southern Europe.—Among the most characteristic African animals are the lion, hyena, jackal, gorilla, chimpanzee, baboon, African elephant (never domesticated, yielding much ivory to trade), hippopotamus, rhinoceros, giraffe, zebra, quagga, antelopes in great variety and immense numbers.—Among birds are the ostrich, the secretary-bird or serpent-eater, the honey-guide cuckoo, sacred ibis, guinea fowl.—The reptiles include the crocodile, chameleon, and serpents of various kinds, some of them very venomous. Among insects are locusts, scorpions the tsetse-fly whose bite is so fatal to cattle, and white-ants.

The great races of which the population of Africa mainly consists are the Hamites, the Semites, the Negroes, and the Bantus. To the Semitic stock belong the Arabs, who form a considerable portion of the population in Egypt and along the north coast, while a portion of the inhabitants of Abyssinia are of the same race (though the blood is considerably mixed). The Hamites are represented by the Copts of Egypt, the Berbers, Kabyles, &c., of Northern Africa, and the Somâli, Danâkil, &c., of East Africa. The Negro races occupy a vast territory in the Soudan and Central Africa, while the Bantus occupy the greater part of Southern Africa from a short distance north of the equator, and include the Kaffres, Bechuanas, Swahili, and allied races. In the extreme south-west are the Hottentots and Bushmen (the latter a dwarfish race), distinct from the other races as well as, probably, from each other. In Madagascar there is a large Malay element. To these may be added the Fulahs on the Niger and the Nubians on the Nile and elsewhere, who are of a brownish colour, and are often regarded as distinct from the other races, though sometimes classed with the Negroes. In religion a great proportion of the inhabitants are heathens of the lowest type; Moham-

medanism numbers a large number of adherents in North Africa, and is rapidly spreading in the Soudan; Christianity prevails only among the Copts, the Abyssinians, and the natives of Madagascar, the latter having been converted in recent times. Elsewhere the missionaries seem to have made but little progress. Over great part of the continent civilization is at a low ebb, yet in some parts the natives have shown considerable skill in agriculture and various mechanical arts, as in weaving and metal working. Of African trade two features are the caravans that traverse great distances, and the trade in slaves that still widely prevails, and is accompanied by an immense amount of bloodshed. Among articles exported from Africa are palm-oil, diamonds, ivory, ostrich feathers, wool, cotton, esparto, caoutchouc, &c. The total population is estimated at 200,000,000. Of these a small number are of European origin—French in Algeria, British and Dutch at the south, Bechaland to the British.

The chief independent states in Africa are Morocco, Bornu, Waday, Bagirmi, Dahomey, Liberia, the Congo State, South African Republic, Orange River Free State. In 1891 Portugal annexed part of Lunda. To Great Britain belong the colonies of the Cape and Natal with some large adjoining tracts, also Sierra Leone and other settlements on the west coast, a part of the coast of the Gulf of Aden, Sokoto, and Mauritius, Egypt and the Soudan and Zanzibar; to France belong Algeria and Tunis, Senegambia, and a considerable territory north of the lower Congo; the Portuguese possess the west coast of South Africa from about lat. 6° S. to 17° S., and the east coast from about 10° S. to 27° S.; Germany now has a portion of the southwest coast; to Turkey nominally belong Egypt, Barca, and Tripoli; Spain has a part of the coast of the Sahara. The Congo State is under the sovereignty of the King of Belgium; Sokoto is governed by the Royal Niger Co., and was the scene of the recent Anglo-French dispute.

The name Africa was given by the Romans at first only to a small district in the immediate neighbourhood of Carthage. The Greeks called Africa Libya, and the Romans often used the same name. The first African exploring expedition on record was sent by Pharaoh Necho about the end of the seventh century B.C. to circumnavigate

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the continent. The navigators, who were Phœnicians, were absent three years, and according to report they accomplished their object. Fifty or a hundred years later, Hanno, a Carthaginian, made a voyage down the west coast and seems to have got as far as the Bight of Benin. The east coast was probably known to the ancients as far as Mozambique and the island of Madagascar. Of modern nations the Portuguese were the first to take in hand the exploration of Africa. In 1433 they doubled Cape Bojador, in 1441 reached Cape Blanco, in 1442 Cape Verde, in 1462 they discovered Sierra Leone. In 1484 the Portuguese Diego Cam discovered the mouth of the Congo. In 1486 Bartholomew Diaz rounded the Cape of Good Hope and reached Algoa Bay. A few years later a Portuguese traveller visited Abyssinia. In 1497 Vasco da Gama, who was commissioned to find a route by sea to India, sailed round the southern extremity as far as Zanzibar, discovering Natal on his way. The first European settlements were those of the Portuguese in Angola and Mozambique, soon after 1500. In 1650 the Dutch made a settlement at the Cape. In 1770 James Bruce reached the source of the Blue Nile in Abyssinia. For the exploration of the interior of Africa, however, little was done before the close of last century.

Modern African exploration may be said to begin with Mungo Park, who reached the upper course of the Niger (1795-1805). Dr. Lacerda, a Portuguese, about the same time reached the capital of the Cazembe, in the centre of South Africa, where he died. In 1802-6 two Portuguese traders crossed the continent from Angola, through the Cazembe's dominions, to the Portuguese possessions on the Zambesi. In 1822-24 extensive explorations were made in Northern and Western Africa by Denham, Clapperton, and Oudney, who proceeded from Tripoli by Murzuk to Lake Tchad, and explored the adjacent regions; Laing, in 1826, crossed the desert from Tripoli to Timbuctoo; Caillié, leaving Senegal, made in 1827-28 a journey to Timbuctoo, and thence through the desert to Marocco. In 1830 Lander traced a large part of the course of the Niger downward to its mouth, discovering its tributary the Benue. In the south Livingstone, who was stationed as a missionary at Kolobeng, setting out from that place in 1849 discovered Lake Ngami. In 1851 he went north again, and came upon numerous rivers

flowing north, affluents of the Zambesi. In 1848 and 1849 Krapf and Rebmann, missionaries in East Africa, discovered the mountains Kilimanjaro and Kenia. An expedition sent out by the British government started from Tripoli in 1850 to visit the Sahara and the regions around Lake Tchad, the chiefs being Richardson, Overweg, and Barth. The last alone returned in 1855, having carried his explorations over 2,000,000 sq. miles of this part of Africa, hitherto almost unknown. In 1853-56 Livingstone made an important series of explorations. He first went north-westwards, tracing part of the Upper Zambesi, and reached St. Paul de Loanda on the west coast in 1854. On his return journey he followed pretty nearly the same route till he reached the Zambesi, and proceeding down the river, and visiting its falls, called by him the Victoria Falls, he arrived at Quilimane at its mouth on 20th May, 1856, thus crossing the continent from sea to sea. In 1858 he resumed his exploration of the Zambesi regions, and in various journeys visited Lakes Shirwa and Nyassa, sailed up the Shire to the latter lake, and established the general features of the geography of this part of Africa, returning to England in 1864. By this time the great lakes of equatorial Africa were becoming known, Tanganyika and Victoria having been discovered by Burton and Speke in 1858, and the latter having been visited by Speke and Grant in 1862 and found to give rise to the Nile, while the Albert Nyanza was discovered by Baker in 1864. In 1866 Livingstone entered on his last great series of explorations, the main object of which was to settle the position of the water-sheds in the interior of the continent, and which he carried on till his death in 1873. His most important explorations on this occasion were west and south-west of Tanganyika, including the discovery of Lakes Bangweolo and Moero, and part of the upper course of the river Congo (here called Lualaba). For over two years he was lost to the knowledge of Europe till met with by H. M. Stanley at Tanganyika in 1871. Gerhard Rohlfs, in a succession of journeys from 1861 to 1874 has traversed the Sahara in various directions, and has crossed the continent entirely from Tripoli to Lagos by way of Murzuk, Bornu, &c. In 1873-75 Lieut. Cameron, who had been sent in search of Livingstone, surveyed Lake Tanganyika, explored the country to the west of it, and

AFRICAN METHODIST EPISCOPAL CHURCH — AGARIC.

then travelling to the south-west, finally reached Benguela on the Atlantic coast. In 1874-77 Stanley surveyed Lakes Victoria Nyanza and Tanganyika and explored the intervening country, then going westward to where Livingstone had struck the Congo he followed the river down to its mouth, thus finally settling its course and completing a remarkable and valuable series of explorations. In 1879 Serpa Pinto completed a journey across the continent from Benguela to Natal, and in 1881-82 Wissman and Pogge crossed it again from St. Paul de Loanda to Zanzibar. In the past few years our knowledge of this part of Africa has been rapidly increased through the efforts of travellers, missionaries, and commercial agents, and it is surprising at how many points already white men may be found stationed. On the Upper Congo there are now some six steamers, on Tanganyika three, on Nyassa two. Stanley's latest mission to Africa (1887-89) resulted in the rescue of Emin Bey. In 1890 Uganda, Unyoro, and part of Ruanda and Karagwe were annexed by the British East African Company, while the remainder of Ruanda and Karagwe was included in the German East African Protectorate. In 1891 Luanda was divided between Portugal and the Congo Free State. The French captured the capital of Dahomey in 1892.

African Methodist Episcopal Church, organized in Philadelphia in 1816, withdrew from the M. E. Church to have larger privileges and more freedom of action. It has a general and annual conferences, bishops, &c. It is distributed in forty-one states and territories, principally in the South. In 1890 it numbered 452,725 members; church property, \$6,468,280.

African Methodist Episcopal Zion Church, organized in New York city in 1796, to 'have an opportunity to exercise their spiritual gifts among themselves.' Lay representation is a prominent feature in its polity, and women can be ordained as preachers. It has (1890) 349,788 communicants, in 29 States.

Agamem'non, in Greek mythology, son of Atreus, King of Mycenæ and Argos, brother of Menelaus, and commander of the allied Greeks at the siege of Troy. He was the father of Orestes, Iphigenia, and Electra.

Agamogenesis (-jen'e-sis; Gr. *a*, priv., *gamos*, marriage, *genesis*, reproduction), the production of young without the congress

of the sexes, one of the phenomena of alternate generation. See *Generation*.

Aganippe (-nip'ē), a fountain on Mount Helicon, in Greece, sacred to the Muses, which had the property of inspiring with poetic fire whoever drank of it.

Agape (ag'a-pē; Gr. *agapē*, love), in ecclesiastical history, the love-feast or feast of charity, in use among the primitive Christians, when a liberal contribution was made by the rich to feed the poor. During the three first centuries love-feasts were held in the churches without scandal, but in after-times the heathen began to tax them with impurity, and they were condemned at the Council of Carthage in 397. Some modern sects, as the Wesleyans, Sandemanians, Moravians, &c., have attempted to revive this feast.

Agapemone (ag-a-pem'o-nē; lit. 'the abode of love'), the name of a singular conventual establishment which has existed at Spaxton, near Bridgewater, Somersetshire, since 1859, the originator of it being a certain Henry James Prince, at one time a clergyman of the Church of England, who called himself the Witness of the First Resurrection. The life spent by the inmates appears to be a sort of religious epicureanism. Some of the proceedings of the inmates of the 'Abode of Love' have resulted in applications to the courts of law, where parties formerly members of the society have returned to the world and sought to regain their rights from Prince and his followers, and such cases have caused some scandal; but the sect has been scarcely heard of for some years.

A'gar-a'gar, a dried sea-weed of the Asiatic Archipelago, the *Gracilaria lichenoides*, much used in the East for soups and jellies, and also by the paper and silk manufacturers of Eastern Asia as an ingredient in some classes of their goods.

Agar'ic (*Agaricus*), a large and important genus of fungi, characterized by having a fleshy cap or pileus, and a number of radiating plates or gills on which are produced the naked spores. The majority of this species are furnished with stems, but some are attached to the objects on which they grow by their pileus. Over a thousand species are known, and are arranged in five sections according as the colour of their spores is white, pink, brown, purple, or black. Many of the species are edible, like the common mushroom (*A. campestris*), and supply a delicious article of food, while others are deleterious and even poisonous.

Agario Mineral, or MOUNTAIN-MEAL, one of the purest of the native carbonates of lime, found chiefly in the clefts of rocks and at the bottom of some lakes in a loose or semi-indurated form resembling a fungus. The name is also applied to a stone of loose consistence found in Tuscany, of which bricks may be made so light as to float in water, and of which the ancients are supposed to have made their floating bricks. It is a hydrated silicate of magnesium, mixed with lime, alumina, and a small quantity of iron.

Aga'sias, a Greek sculptor of Ephesus, about 400 B.C., whose celebrated statue, known as the Borghese Gladiator, representing a soldier contending with a horseman, is now in the Louvre, Paris.

Agassiz (ag'as-ē), LOUIS JOHN RUDOLPH, an eminent naturalist, born 1807, died 1873, son of a Swiss Protestant clergyman at Motiers, near the eastern extremity of the Lake of Neufchâtel. He completed his education at Lausanne, and early developed a love of the natural sciences. He studied medicine at Zürich, Heidelberg, and Munich. His attention was first specially directed to ichthyology by being called on to describe the Brazilian fishes brought to Europe from Brazil by Martius and Spix. This work was published in 1829, and was followed in 1830 by *Histoire Naturelle des Poissons d'eaux douces de l'Europe Centrale* (Fresh-water Fishes of Central Europe). Directing his attention to fossil ichthyology, five volumes of his *Recherches sur les Poissons Fossiles* appeared between 1834 and 1844. His researches led him to propose a new classification of fishes, which he divided into four classes, distinguished by the characters of the skin, as ganoids, placoids, cycloids, and ctenoids. His system has not been generally adopted, but the names of his classes have been used as useful terms. In 1836 he began the study of glaciers, and in 1840 he published his *Études sur les Glaciers*, in 1847 his *Système Glaciaire*. From 1838 he had been professor of natural history at Neufchâtel, when in 1846 pressing solicitations and attractive offers induced him to settle in America, where he was connected as a teacher first with Harvard University, Cambridge, and latterly with Cornell University as well as Harvard. After his arrival in America he engaged in various investigations and explorations, and published numerous works, including: *Principles of Zoology*, in connection with Dr. A. Gould

(1848); *Contributions to the Natural History of the United States* (four vols. 1857-62); *Zoologie Générale* (1854); *Methods of Study in Natural History* (1863). In 1865-66 he made zoological excursions and investigations in Brazil, which were productive of most valuable results. Agassiz held views on many important points in science different from those which prevailed among the scientific men of the day, and in particular he strongly opposed the evolution theory.

Agassiz (ag'a sē), MOUNT, an extinct volcano in Arizona, U.S., 10,000 feet in height; a place of summer resort, near the Great Cañon of the Colorado.

Ag'ate, a siliceous semi-pellucid compound mineral, consisting of bands or layers of various colours blended together, the base generally being chalcedony, and this mixed with variable proportions of jasper, amethyst, quartz, opal, heliotrope, and carnelian. The varying manner in which these materials are arranged causes the agate when polished to assume some characteristic appearances, and thus certain varieties are distinguished, as the ribbon agate, the fortification agate, the zone agate, the star agate, the moss agate, the clouded agate, &c. In Scotland they are cut and polished under the name of Scottish pebbles.

Agathar'chus, a Greek painter, native of Samos, the first to apply the rules of perspective to theatrical scene-painting; flourished about 480 B.C.

Agath'ias, a Greek poet and historian, born at Myrina, Asia Minor, about 536 A.D.; author of an anthology, a collection of love poems, and a history (553-558 A.D.), which, with all its blemishes, is a valuable chronicle of events during an eventful period of Roman history.

Agathocles (a-gath'o-klēz), a Sicilian Greek, one of the boldest adventurers of antiquity, born 361 B.C. By his ability and energy, and being entirely unscrupulous, he raised himself from the position of a potter to that of sovereign of Syracuse and master of Sicily. Wars with the Carthaginians were the chief events of his life. He died (was poisoned) at the age of seventy-two, or, as some say, ninety-five.

Ag'athon, or AGATHO, a Greek tragic poet, a friend of Euripides, and contemporary with Socrates and Alcibiades, born about 447 B.C., died about 400 B.C. The dinner which he gave to celebrate his first dramatic victory was made the groundwork of Plato's Symposium.

AGAVE — AGE.

Agave (a-gā'vē), a genus of plants, nat. order Amaryllidaceæ (which includes the daffodil and narcissus), popularly known as American aloes. They are generally large, and have a massive tuft of fleshy leaves with a spiny apex. They live for many years—ten to seventy according to treatment—before flowering. When this takes place the tall



American Aloe (*Agave americana*).

flowering stem springs from the centre of the tuft of leaves, and grows very rapidly until it reaches a height of 15, 20, or even 40 feet, bearing towards the end a large number of flowers. The best-known species is *A. americana* (common American aloe), introduced into Europe 1561, and now extensively grown in the warmer parts of this continent as well as in Asia (India in particular). This and other species yield various important products. The sap when fermented yields a beverage resembling cider, called by the Mexicans *pulque*. The leaves are used for feeding cattle; the fibres of the leaves (sometimes called *pita* hemp or flax) are formed into thread, cord, and ropes; an extract from the leaves is used as a substitute for soap; slices of the withered flower-stem are used as razor-strops.

Agde (âgd), a seaport of southern France, department of Hérault, with a cathedral, an ancient and remarkable structure. The

trade, chiefly coasting, is extensive. Pop. 7507.

Age, a period of time representing the whole or a part of the duration of any individual thing or being, but used more specifically in a variety of senses. In law *age* is applied to the periods of life when men and women are enabled to do that which before, for want of years and judgment, they could not legally do. In G. Britain a male at twelve years old may take the oath of allegiance; at fourteen is at years of discretion, and therefore may consent or disagree to marriage, may choose his guardian, may be an executor, although he cannot act until of age; and at twenty-one is at his own disposal, and may alienate and devise his lands, goods, and chattels. A female also at seven years of age may be betrothed or given in marriage; at fourteen, is at years of legal discretion, and may choose a guardian; at seventeen may be an executrix; and at twenty-one may dispose of herself and her lands. So that full age in male or female is twenty-one years, which age is completed on the day preceding the anniversary of a person's birth, who till that time is an infant, and so styled in law. At full age (twenty-one) male citizens in the U. States can vote, and hold office except in certain specified cases, such as a representative in Congress, who must be at least twenty-five years of age, a U. States senator, thirty years, and the president, thirty-five years. The military age is from eighteen to forty-five years.

The term is also applied to designate the successive epochs or stages of civilization in history or mythology. Hesiod speaks of five distinct ages:—1. The *golden* or *Saturnian age*, a patriarchal and peaceful age. 2. The *silver age*, licentious and wicked. 3. The *brazen age*, violent, savage, and warlike. 4. The *heroic age*, which seemed an approximation to a better state of things. 5. The *iron age*, when justice and honour had left the earth. The term is also used in such expressions as the *dark ages*, the *middle ages*, the *Elizabethan age*, &c.

The *Archæological Ages* or *Periods* are three—the Stone Age, the Bronze Age, and the Iron Age, these names being given in accordance with the materials chiefly employed for weapons, implements, &c., during the particular period. The Stone Age of Europe has been subdivided into two—the Palæolithic or earlier, and Neolithic or later. The word *age* in this sense has no reference to

the lapse of time, but simply denotes the stage at which a people has arrived in its progress towards civilization; thus there are races still in their stone age.

Agen (â-zhan), one of the oldest towns in France, capital of dep. Lot-et-Garonne, on the Garonne, 74 miles south-east of Bordeaux; see of a bishop; manufactures sail-cloth, woollens and linens, &c., and has an extensive trade. Pop. 17,098.

A'gent, a person appointed by another to act for or perform any kind of business for him, the latter being called in relation to

the former the *principal*. An agent may be general or special. The acts of a general agent bind his principal, although the agent may violate his private instructions. An agent, without special authority, cannot appoint another person in his stead.

Ageratum (a-jer'a-tum), a genus of composite plants of the warmer parts of America, one species of which, *A. mexicanum*, is a well-known flower-border annual with dense lavender-blue heads.

Agessilaus (a-jes-i-lā'us), a king of Sparta, born in 442 B.C., and elevated to the throne



The Field of Agincourt—From a drawing by John Absolon.

after the death of his brother Agis II. He acquired renown by his exploits against the Persians, Thebans, and Athenians. Though a vigorous ruler, and almost adored by his soldiers, he was of small stature and lame from his birth. He died in Egypt in the winter of 361–360 B.C. Xenophon, Plutarch, and Cornelius Nepos are among his biographers.

Agglom'erate, in geology, a collective name for masses consisting of angular fragments ejected from volcanoes. When the mass consists of fragments worn and rounded by water it is called a *conglomerate*.

Agglu'tinate Languages, languages in which the modifying suffixes are, as it were, glued on to the root, both it and the suffixes retaining a kind of distinctive independence and individuality, as in the Turkish and other Turanian languages, and the Basque language.

Agg'regate, a term applied in geology to rocks composed of several different mineral constituents capable of being separated by

mechanical means, as granite, where the quartz, felspar, and mica can be separated mechanically.—In botany it is applied to flowers composed of many small florets having a common undivided receptacle, the anthers being distinct and separate, the florets commonly standing on stalks, and each having a partial calyx.

Aghrim, or AUGHRIM (a'grim), a village in the county of Galway in Ireland, memorable for a decisive victory gained in the neighbourhood, July 12, 1691, by the forces of William III., under Ginkel, over the Irish and French troops under St. Ruth.

Agila (ag'i-la), a resinous perfume obtained apparently from *Aquilaria Agallochum*. See *Agallochum*.

Agincourt (â-zhan-kör), a village of Northern France, department Pas de Calais, famous for the battle of October 25, 1415, between the French and English. Henry V., king of England, eager to conquer France, landed at Harfleur, took the place by storm, and wished to march through

Picardy to Calais, but was met by a French army under the Constable D'Albret. The English numbered about 15,000 men, while the French numbers are variously stated at from 50,000 to 150,000. The confined nature and softness of the ground were to the disadvantage of the French, who were drawn up in three columns unnecessarily deep. The English archers attacked the first division in front and in flank, and soon threw them into disorder. The second division fled on the fall of the Duc d'Alençon, who was struck down by Henry himself; and the third division fled without striking a blow. Of the French 10,000 were killed, including the Constable d'Albert, with six dukes and princes. The English lost 1600 men killed, among them the Duke of York, Henry's uncle. After the battle the English continued their march to Calais.

Agio (ā'ji-o), the difference between the real and the nominal value of money, as between paper-money and actual coin: an Italian term originally. Hence *agiotage*, speculation on the fluctuating differences in such values.

Agira (ā-jē'rā), a town of Sicily southwest of Etna, anciently *Aggrium*. Pop. 13,698.

Agis (ā'jis), the name of four Spartan kings, the most important of whom was Agis IV., who succeeded to the throne in B.C. 244, and reigned four years. He attempted a reform of the abuses which had crept into the state—his plan comprehending a redistribution of the land, a division of wealth, and the cancelling of all debts. Opposed by his colleague Leonidas, advantage was taken of his absence in an expedition against the Ætolians, to depose him. Agis at first took sanctuary in a temple, but he was entrapped and hurriedly executed by his rival.

Agitators, an erroneous form of *Adjutors*.

Aglaia (a-glā'ya), in Greek mythology, one of the three Graces.

Agnano (ā-nyā'nō), formerly a lake of Italy west of Naples, occupying probably the crater of an extinct volcano, but now drained.

Ag'nates, in the civil law relations on the male side, in opposition to *cognates*, relations on the female side.

Agnes, St., a saint, who, according to the story, suffered martyrdom because she steadfastly refused to marry the son of the prefect of Rome, and adhered to her reli-

gion in spite of repeated temptations and threats, A.D. 303. She was first led to the stake, but as the flames did not injure her she was beheaded. Her festival is celebrated on the 21st of January.

Agnesi (ā-nyā'sē), **MARIA GAETANA**, a learned Italian lady, born at Milan in 1718. In her ninth year she was able to speak Latin, in her eleventh Greek; was a University professor. She died in 1799.

Agnew, D. HAYES, surgeon, was born in Lancaster co., Pa., Nov. 24, 1818. An accomplished surgeon, he was a specialist on diseases of the eye and of women. He was a profound anatomist, and had wonderful skill and ease in operating. Sympathetic and gentle, he was an ideal physician and consultant. He was emeritus professor of surgery and honorary professor of clinical surgery at University of Pennsylvania. He died March 22, 1892.

Ag'ni, the Hindu god of fire, one of the eight guardians of the world, and especially



Agni—Moore's Hindoo Pantheon.

the lord of the south-east quarter. He is celebrated in many of the hymns of the Rig Veda. He is often represented as of a red or flame colour, and rides on a ram or a goat. He is still worshipped as the personification of fire.

Agnolo, **BACCIO D'** (bách'ō-dān'yo-lō), a Florentine wood-carver, sculptor, and architect; designed some of the finest palaces, &c., in Florence, such as the Villa Borghese, the Palais Bartolini, &c.; born 1460, died 1543.

Agno'men (L.), an additional name given by the Romans to an individual in allusion

to some quality, circumstance, or achievement by which he was distinguished, as *Africanus* added to P. Cornelius Scipio.

Agnone (ä-nyō'nā), a town of S. Italy, prov. of Molise, famous for the excellence of its copper wares. Pop. 6389.

Agnostics (ag-nos'tiks; Gr. *a*, not, *gignōskein*, to know), a modern term applied to those who disclaim any knowledge of God or of the origin of the universe, holding that the mind of man is limited to a knowledge of phenomena and of what is relative, and that, therefore, the infinite, the absolute, and the unconditioned being beyond all experience, are consequently beyond its range.

Agnus Castus, a shrub, *Vitex Agnuscatus*, nat. ord. Verbenaceæ, a native of the Mediterranean countries, with white flowers and acrid, aromatic fruits. It had anciently the imagined virtue of preserving chastity—hence the term *castus* (L., chaste).

Agnus Dei (dē'i; L., 'the Lamb of God'), a term applied to Christ in John i. 29, and in the Roman Catholic liturgy a prayer beginning with the words 'Agnus Dei,' generally sung before the communion. The term is also commonly given to a medal, or more frequently a cake of wax, consecrated by the pope, stamped with the figure of a lamb supporting the banner of the cross; supposed to possess great virtues, such as preserving those who carry it in faith from accidents, &c.

Agon'ic Line (Gr. *a*, not, and *gōnia*, an angle), in terrestrial magnetism a name applied to the line which joins all the places on the earth's surface at which the needle of the compass points due north and south, without any declination. This line, which varies from time to time, at present passes through S. America and N. America to the Magnetic North Pole, thence to the White Sea, south through the Persian Gulf, Indian Ocean, and Australia to the Southern Magnetic Pole.

Ag'ony Column, the Personals column in the advertising sheet of the daily journals, in which disappearances, losses, mysterious appeals and correspondence, and generally any advertising eccentricity appear.

Ag'ora, the market-place of a Greek town, corresponding to the Roman *forum*. The Agora of Athens is situated in a valley partially inclosed by the Acropolis, Areopagus, Pnyx, and Museum.

Agos'ta. See *Augusta*.

Agouara (ä-gu-ä'rä), a name given to the crab-eating racoon (*Procyon cancrivorus*) of S. America.

Agoult (ä-gö), MARIE DE FLAVIGNY, COMTESSE D', a French writer of fiction, history, politics, philosophy, and art; daughter of Viscount de Flavigny; born at Frankfurt in 1805, died at Paris 1876. She contributed many articles to the *Revue des Deux-Mondes*, &c., under the name of *Daniel Stern*, and wrote *Histoire de la Révolution de 1848*; *Trois Journées de la Vie de Marie Stuart*; *Florence and Turin*, a series of artistic and political studies; *Dante and Goethe*; dialogues, and numerous romances, &c.

Agouta (a-gö'ta), *Solenodon paradoxus*, an insectivorous mammal peculiar to Hayti, of the tanrec family, somewhat larger than a



Agouta (*Solenodon paradoxus*).

rat. It has the tail devoid of hair and covered with scales, the eyes small, and an elongated nose like the shrews. Another species (*S. cubanus*) belongs to Cuba.

Agouti (a-gö'ti), the name of several rodent mammals, forming a family by themselves, genus *Dasyprocta*. There are eight or nine species, all belonging to S. America and the W. Indies. The common agouti, or yellow-rumped cavy (*D. agouti*), is of the size of a rabbit. It burrows in the ground or in hollow trees, lives on vegetables, doing much injury to the sugarcane, is as voracious as a pig, and makes a similar grunting noise. Its flesh is white and well tasted.

Agra (ä'gra), a city of India, in the Northwest Provinces, on the right bank of the Jumna, 841 miles by rail from Calcutta. It is a well-built and handsome town and has various interesting structures, among which are the imperial palace, a mass of buildings erected by several emperors; the Moti Masjid or Pearl Mosque (both within the old and extensive fort); the mosque called the Jama Masjid (a cenotaph of white marble); and, above all, the Taj Mahal, a mausoleum of the seventeenth century, built by the Emperor Shah Jehan to his favourite queen, of white marble, adorned

throughout with exquisite mosaics. There are several Protestant and Roman Catholic churches, a government college, and three other colleges or high schools, besides a medical college. Agra has a trade in grain, sugar, &c., and some manufactures, including beautiful inlaid mosaics. It was founded in 1566 by the Emperor Akbar, and was a residence of the following emperors for over a century. Pop. 1891, 168,662. Agra division has an area of 10,151 sq. miles, and a pop. of 4,834,064.

Agraffe', a sort of ornamental buckle, clasp, or similar fastening for holding together articles of dress, &c., often adorned with precious stones.

Agram (og'rom), or ZAGRAB, a city in the Austrian Empire, capital of Croatia and Slavonia, near the river Save; contains the residence of the ban or governor of Croatia and Slavonia, government buildings, cathedral (being the see of a Roman Catholic archbishop), university, theatre, &c.; carries on an active trade, and manufactures tobacco, leather, and linens. Pop. 1891, 37,369.

Agra'phia. See *Aphasia*.

Agrarian Laws, laws enacted in ancient Rome for the division of the public lands, that is, the lands belonging to the state (*ager publicus*). As the territory of Rome increased the public land increased, the land of conquered peoples being always regarded as the property of the conqueror. The right to the use of this public land belonged originally only to the patricians or ruling class, but latterly the claims of the plebeians on it were also admitted, though they were often unfairly treated in the sharing of it. Hence arose much discontent among the plebeians, and various remedial laws were passed with more or less success. Indeed an equitable adjustment of the land question between the aristocracy and the common people was never attained.

Agric'ola, CNEIUS JULIUS, lived from A.D. 37 to 93, a Roman consul under the Emperor Vespasian, and governor in Britain, the greater part of which he reduced to the dominion of Rome; distinguished as a statesman and general. His life, written by his son-in-law, the historian Tacitus, gives the best extant account of Britain in the early part of the period of the Roman rule. He was the twelfth Roman general who had been in Britain, but was the only one who effectually subdued the southern portion of it and reconciled the Britons to the

Roman yoke. This he did by teaching them the arts of civilization and to settle in towns. He constructed the chain of forts between the Forth and the Clyde, defeated Galgacus at the battle of the Grampians, and sailed round the island, discovering the Orkneys.

Agric'ola, GEORG (originally Bauer, that is, cultivator = L. *agricola*), born in Saxony 1490, died at Chemnitz 1555, German physician and mineralogist. Though tinged with the superstitions of his age, he made the first successful attempt to reduce mineralogy to a science, and introduced many improvements in the art of mining.

Agricola, JOHANN, the son of a tailor at Eisleben, was born in 1492, and called, from his native city, *master of Eisleben* (*magister Islebius*); one of the most active among the theologians who propagated the doctrines of Luther. In 1537, when professor in Wittenberg, he stirred up the Antinomian controversy with Luther and Melancthon. He afterwards lived at Berlin, where he died in 1566, after a life of controversy. Besides his theological works he composed a work explaining the common German proverbs.

Agricola, JOHANN FRIEDRICH, German musician and composer, born near Altenburg 1720, died at Berlin 1774; pupil of Sebastian Bach; wrote several operas, including *Iphigenia in Tauris*.

Agricola, RODOLPHUS, German scholar, born at Groningen 1442, died at Heidelberg 1485. After travelling in France and Italy he was appointed professor of philosophy at Heidelberg, and did good service in transplanting the revived classical learning into Germany.

Ag'riculture is the art of cultivating the ground, more especially with the plough and in large areas or fields, in order to raise grain and other crops for man and beast; including the art of preparing the soil, sowing and planting seeds, removing the crops, and also the raising and feeding of cattle or other live stock. This art is the basis of all other arts, and in all countries coeval with the first dawn of civilization. At how remote a period it must have been successfully practised in Egypt, Mesopotamia, and China we have no means of knowing. Egypt was renowned as a corn country in the time of the Jewish patriarchs, who themselves were keepers of flocks and herds rather than tillers of the soil. Naturally little is known of the methods and details

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of agriculture in early times. Among the ancient Greeks the implements of agriculture were very few and simple. Hesiod, who wrote a poem on agriculture as early as the eighth century B.C., mentions a plough consisting of three parts, the share-beam, the draught-pole, and the plough-tail, but antiquarians are not agreed as to its exact form. The ground received three ploughings, one in autumn, another in spring, and a third immediately before sowing the seed. Manures were applied, and the advantage of mixing soils, as sand with clay or clay with sand, was understood. Seed was sown by hand, and covered with a rake. Grain was reaped with a sickle, bound in sheaves, thrashed, then winnowed by wind, laid in chests, bins, or granaries, and taken out as wanted by the family, to be ground. Agriculture was highly esteemed among the ancient Romans. Cato, the censor, who was celebrated as a statesman, orator, and general, derived his highest honours from having written a voluminous work on agriculture. In his *Georgics* Virgil has thought the subject of agriculture worthy of being treated in the most graceful and harmonious verse. The Romans used a great many different implements of agriculture. The plough is represented by Cato as of two kinds, one for strong, the other for light soils. Varro mentions one with two mould-boards, with which, he says, 'when they plough, after sowing the seed, they are said to ridge.' Pliny mentions a plough with one mould-board, and others with a coulter, of which he says there were many kinds. Fallowing was a practice rarely deviated from by the Romans. In most cases a fallow and a year's crop succeeded each other. Manure was collected from nearly or quite as many sources as have been resorted to by the moderns. Irrigation on a large scale was applied both to arable and grass lands.

The Romans introduced their agricultural knowledge among the Britons, and during the most flourishing period of the Roman occupation large quantities of corn were exported from Britain to the Continent. During the time that the Angles and Saxons were extending their conquests over the country agriculture must have been greatly neglected; but afterwards it was practised with some success among the Anglo-Saxon population, especially, as was generally the case during the middle ages, on lands belonging to the church. Swine formed at this time

a most important portion of the live stock, finding plenty of oak and beech mast to eat. The feudal system introduced by the Normans, though beneficial in some respects as tending to ensure the personal security of individuals, operated powerfully against progress in agricultural improvements. War and the chase, the two ancient and deadliest foes of husbandry, formed the most prominent occupations of the Norman princes and nobles. Thriving villages and smiling fields were converted into deer forests, vexatious imposts were laid on the farmers, and the serfs had no interest in the cultivation of the soil. But the monks of every monastery retained such of their lands as they could most conveniently take charge of, and these they cultivated with great care, under their own inspection, and frequently with their own hands. The various operations of husbandry, such as manuring, ploughing, sowing, harrowing, reaping, thrashing, winnowing, &c., are incidentally mentioned by the writers of those days; but it is impossible to collect from them a definite account of the manner in which those operations were performed.

The first English treatise on husbandry and the best of the early works on the subject was published in the reign of Henry VIII. (in 1534), by Sir A. Fitzherbert, judge of the Common Pleas. It is entitled the *Book of Husbandry*, and contains directions for draining, clearing, and inclosing a farm, for enriching the soil, and rendering it fit for tillage. Lime, marl, and fallowing are strongly recommended. The subject of agriculture attained some prominence during the reign of Elizabeth. The principal writers of that period were Tusser, Googe, and Sir Hugh Platt. Tusser's *Five Hundredth Points of Good Husbandry* (first complete edition published in 1580) conveys much useful instruction in metre, but few works of this time contain much that is original or valuable. The first half of the seventeenth century produced no systematic work on agriculture, though several on different branches of the subject. About 1645 the field cultivation of red clover was introduced into England, the merit of this improvement being due to Sir Richard Weston, author of a *Discourse on the Husbandry of Brabant and Flanders*. The Dutch had devoted much attention to the improvement of winter roots, and also to the cultivation of clover and other artificial grasses, and the farmers and proprie-

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tors of England soon saw the advantages to be derived from their introduction. The cultivation of clover soon spread, and Sir Richard Weston seems also to have introduced turnips. Potatoes had been introduced during the latter part of the sixteenth century, but were not for long in general cultivation. In the eighteenth century the first name of importance in British agriculture is that of Jethro Tull. Tull was a great advocate of the system of sowing crops in rows or drills with an interval between every two or three rows wide enough to allow of ploughing or hoeing to be carried on. Robert Bakewell and others effected some important improvements in the breeds of cattle, sheep, and swine, in the latter half of the last century. By the end of the century it was a common practice to alternate green crops with grain crops, instead of exhausting the land with a number of successive crops of corn. A well-known writer on agriculture at this period, and one who did a great deal of good in diffusing a knowledge of the subject, was Arthur Young. During the wars caused by the French revolution (1795-1814) the high price of agricultural produce led to an extraordinary improvement in agriculture all over Britain. Wheat, barley, and oats are the chief cereals in Britain; the chief roots are turnips and potatoes; other crops (besides grass and clover) are beans, peas, mangold, hops, and flax. In Europe at large the principal cereals are wheat, oats, barley, and rye, wheat being mostly grown in the middle and southern regions, such as France, Spain, part of Germany, Austria, Hungary, Italy, and southern Russia, the others in the more northern portion, while maize is grown in the warmest parts. Turnips are comparatively little grown out of Britain, beet-root in some sense taking their place; potatoes, however, are largely cultivated, except in the south. In Canada large quantities of wheat are grown (chiefly in Ontario, now also in Manitoba); much is also now produced in the Australian colonies.

The vast territory of the United States presents every variety of soil and climate. Its agriculture embraces all the products of European cultivation, together with some of the warmer countries, as cotton, sugar, and indigo. The agricultural implements are, in many respects, similar to those of Great Britain and France. But as a general rule those of the United States

exceed all others in their wonderful adaptation of machinery for all purposes of cultivation and harvesting of crops. So successful have been our farming implements in repeated contests on European soil that their rapid introduction into foreign markets has been somewhat impeded by the great demand at home. The disposition of the American to experiment, to test alleged improvements, and adopt labor-saving expedients, gives a great impulse to the genius of inventors. This mental activity of the American farmer is owing in great part to his superior intelligence.

The American reaper was invented by McCormick in 1834; by many improvements it has secured the European as well as the home market. In 1855 the first American agricultural college was established. In 1862 the passage of the *Homestead* law served to accelerate the occupation of the public lands. In the same year Congress granted to each State 30,000 acres for each Senator and Representative in Congress "in order to promote the liberal and practical education of the industrial classes." In 1867 the organization of the "Patrons of Husbandry," commonly called Grangers, was effected, to look after the interests of farmers, to reduce the profits of middlemen, and to insist on fair treatment from the railroads. The American dairy system, based on the principle of association, has advanced rapidly. Agricultural societies, both State and county, are established in all parts of the United States. The objects of these societies are such as the following: to encourage the introduction of improvements in agriculture; to encourage the improvement of agricultural implements and farm buildings; the application of chemistry to agriculture; the destruction of insects injurious to vegetation; to promote the discovery and adoption of new varieties of grain, or other useful vegetables; to collect information regarding the management of woods, plantations, and fences; to improve the education of those supported by the cultivation of the soil; to improve the veterinary art; to improve the breeds of live stock, &c. Fairs are held, at which prizes are distributed for live stock, implements, and farm produce.

Through the efforts of the above-mentioned and other societies, the investigations of scientific men, and the general diffusion of knowledge among all classes, over two hundred periodicals being de-

voted to its interests, agriculture has made great progress during the present century. Among the chief improvements we may mention deep ploughing and thorough draining. By the introduction of new or improved implements the labour necessary to the carrying out of agricultural operations has been greatly diminished. Science, too, has been called in to act as the handmaid of art, and it is by the investigations of the chemist that agriculture has been put on a really scientific basis. The organization of plants, the primary elements of which they are composed, the food on which they live, and the constituents of soils, have all been investigated, and most important results obtained, particularly in regard to manures and rotations. Artificial manures, in great variety, to supply the elements wanted for plant growth, have come into common use, not only increasing the produce of lands previously cultivated, but extending the limits of cultivation itself. An improvement in all kinds of stock is becoming more and more general, feeding is conducted on more scientific principles, and improved varieties of plants used as field crops have been introduced. One of the recent innovations in the United States is the introduction of the system of *ensilage* for preserving fodder in a green state, which promises to give valuable results, though it has hardly been tested long enough to decide as to its value.

As a result of the new conditions, to be a thoroughly trained and competent agriculturist requires a special education, partly theoretical, partly practical. In particular, no scientific cultivator can now be ignorant of agricultural chemistry, which teaches the constituents of the various plants grown as crops, their relation to the various soils, the nature and function of different manures, &c. In some countries there are now agricultural schools or colleges supported by the state. In the United States nearly all the States have colleges, or departments of colleges, devoted to the teaching of agriculture, and large allotments of public land have been made for their support. In Germany such institutions are numerous and highly efficient. For teaching agriculture practically model farms are commonly established. In many countries too there is a ministry of agriculture as one of the chief departments of government; but in Britain there is only a department of agriculture under a committee of the privy-council, which

collects and publishes very useful statistics. In the U. States the Department of Agriculture was organized in 1862; the Secretary is now a Cabinet officer. In 1892 appropriation by Congress, \$3,282,995.

The chief crop in value grown in the United States is Indian corn, next to which comes wheat. Oats and potatoes are also important crops. The grass crop exceeds in value any other, except wheat and corn. The other principal crops, of which great quantities are grown, are, barley, rye, buckwheat, beets, turnips, carrots, parsnips, and sorghum. Tobacco is a favourite crop in nearly all sections. Since the war the cultivation of rice has been slow in regaining its former prosperity; this is the case also with sugar. In cotton the virtual monopoly of the Southern States has ceased; but the crop increases steadily in amount each year.

It is only in very recent times that much progress has been made in perfecting implements and machinery for cultivating the soil, sowing seed, drilling, reaping, &c.

There exists to-day no prohibition in any country against the admission of American pork products bearing the certificate of inspection of U. S. Department of Agriculture. By proclamation of the Secretary of Agriculture (1892) the U. States has been declared absolutely free from contagious pleuro-pneumonia. Substantial results have been derived from efforts made to direct the attention of Europe to the uses of Indian corn as food for the people.

Agri^gentum (-jen'tum), an ancient Greek city of Sicily (the modern *Girgenti*), founded about 580 B. C., and long one of the most important places on the island. Extensive ruins of splendid temples and public buildings yet attest its ancient magnificence. See *Girgenti*.

Ag'rimony (*Agrimonia*), a genus of plants, natural order Rosaceæ, consisting of slender perennial herbs found in temperate regions. *A. Eupatoria*, or common agrimony, was formerly of much repute as a medicine. Its leaves and root-stock are astringent, and the latter yields a yellow dye.

Agrip'pa, CORNELIUS HENRY, born in 1486, at Cologne, was a man of talents, learning, and eccentricity. In his youth he was secretary to the Emperor Maximilian I.; he subsequently served seven years in Italy, and was knighted. On quitting the army he devoted himself to science, and became famous as a magician and alchemist, and was involved in disputes with the church

men. After an active, varied, and eventful life he died at Grenoble in 1535.

Agrippa, HEROD. See *Herod Agrippa*.

Agrippa, MARCUS VIPSANIUS, a Roman statesman and general, the son-in-law of Augustus; born B.C. 63, died B.C. 12. He was prætor in B.C. 41; consul in 37, 28, and 27; ædile in 33; and tribune from 18 till his death. He commanded the fleet of Augustus in the battle of Actium. To him Rome is indebted for three of her principal aqueducts, the Pantheon, and several other works of public use and ornament.

Agrippi'na, the name of several Roman ladies, among whom we may mention:— 1. The youngest daughter of Marcus Vipsanius Agrippa, and wife of C. Germanicus; a heroic woman, adorned with great virtues. Tiberius, who hated her for her virtues and popularity, banished her to the island of Pandataria, where she starved herself to death in A.D. 33.— 2. A daughter of the last mentioned, and the mother of Nero, by Domitius Ahenobarbus. Her third husband was her uncle, the Emperor Claudius, whom she subsequently poisoned to secure the government of the empire through her son Nero. After ruling a few years in her son's name he became tired of her ascendancy, and caused her to be assassinated (A.D. 60).

Agrostem'ma. See *Lychnis*.

Agros'tis, a genus of grasses, consisting of many species, and valuable as pasture-grasses. The bent-grasses belong to the genus.

Ag'telek, a village in Hungary, near the road from Pesth to Kaschau, with about 600 inhabitants, celebrated for one of the largest and most remarkable stalactitic caverns in Europe.

Agua (äg'wà), an active volcano of Central America, in Guatemala, rising to the height of 15,000 feet. It has twice destroyed the old city of Guatemala, in its immediate vicinity.

Aguara (ä-gwä'rà). See *Agouara*.

Aguardiente (ä-gwär-dē-en'te), a popular spirituous beverage of Spain and Portugal, a kind of coarse brandy, made from red wine, from the refuse of the grapes left in the wine-press, &c., generally flavoured with anise; also a Mexican alcoholic drink distilled from the fermented juice of the agave.

Aguas Calientes (äg'wàs kà-lē-en'tās; lit. 'warm waters'), a town 270 miles N.W. of Mexico, capital of the state of its own name, named from the thermal springs near

it; has manufactures of cottons and a considerable trade. Pop. 25,000.

Ague (ā'gū), a kind of fever, which may be followed by serious consequences, but generally is more troublesome than dangerous. According to the length of the interval between one febrile paroxysm and another, agues are denominated *quotidian* when they occur once in twenty-four hours, *tertian* when they come on every forty-eight hours, *quartan* when they visit the patient once in seventy-two hours. Ague arises from marsh miasmata, a temperature above 60° being, however, apparently required to produce it. To cure the disease and prevent the recurrence, quinine and various other bitter and astringent drugs are given with complete success in the majority of cases.

Ague-cake, a tumour caused by enlargement and hardening of the spleen, often the consequence of ague or intermittent fever.

Aguesseau (ä-ges-ō), HENRI FRANÇOIS D', a distinguished French jurist and statesman, born at Limoges in 1668; was in 1690 advocate-general at Paris, and at the age of thirty-two procureur-général of the parliament. He risked disgrace with Louis XIV. by successfully opposing the famous papal bull *Unigenitus*. He was made chancellor in 1717, was deprived of his office in 1718 on account of his opposition to Law's system of finance, but had to be recalled in 1720. In 1722 he had to retire a second time; but was recalled in 1727 by Cardinal Fleury, and in 1737 again got the chancellorship, which he held till 1750. He died in 1751.

Aguilar (ä-gē-lär'), a town of Spain, province of Cordova, in Andalusia, in a good wine-producing district, and with a trade in corn and wine. Pop. 11,836.

Aguilar (a-gi-lär'), GRACE, an English writer, born at Hackney 1816, died at Frankfort 1847. Of Jewish parentage, she at first devoted herself to Jewish subjects, but her fame rests on her novels, *Home Influence*, *A Mother's Recompense*, *Home Scenes* and *Heart Studies*, &c., most of which were published posthumously under the editorship of her mother.

Aguilas (ä-gē'lās), a flourishing seaport of southern Spain, province of Murcia, with copper and lead smelting works. Pop. 8947.

Agulhas (ä-gul'yàs), CAPE, a promontory, forming the most southern extremity of Africa, about 90 miles south-east of the Cape of Good Hope, rising to 455 feet above the sea, with a lighthouse.

Agu'ti. See *Agouti*.

A'hab, the seventh king of Israel, succeeded his father Omri 928 B.C., and reigned twenty years. At the instigation of his wife Jezebel he erected a temple to Baal, and became a cruel persecutor of the true prophets. He was killed by an arrow at the siege of Ramoth-Gilead.

Ahag'gar, a mountainous region of the Sahara, south of Algeria, with some fertile valleys, inhabited by the Tuaregs.

Ahasue'rus, in Scripture history, a king of Persia, probably the same as Xerxes, the husband of Esther, to whom the Scriptures ascribe a singular deliverance of the Jews from extirpation. — **AHASUERUS** is also a Scripture name for Cambyses, the son of Cyrus (Ezra iv. 6), and for Astyages, king of the Medes (Dan. ix. 1).

A'haz, the twelfth king of Judah, succeeded his father Jotham, 742 B.C. Forsaking the true religion he gave himself up completely to idolatry, and plundered the temple to obtain presents for Tiglath-pileser, king of Assyria.

Ahazi'ah:—1. Son of Ahab and Jezebel, and eighth king of Israel, died from a fall through a lattice in his palace at Samaria after reigning two years (B.C. 896, 895).—2. Fifth king of Judah, and nephew of the above. He reigned but one year, and was slain (B.C. 884) by Jehu.

Ahith'ophel, privy-councillor to David, and confederate and adviser of Absalom in his rebellion against his father. When Hushai's advice prevailed, Ahithophel, despairing of success, hung himself.

Ahmedabad, or **AHMADABAD** (ä-mad-ä-bäd), a town of India, presidency of Bombay, in district of its own name, on the left bank of the Sábarmatí, 310 miles north of Bombay. It was founded in 1412 by Ahmed Shah, and was converted by him into a great capital, adorned with splendid edifices. It came finally into the hands of the British in 1818. It is still a handsome and populous place, inclosed by a wall, with many noteworthy buildings; manufactures of fine silk and cotton fabrics, cloths of gold and silver, pottery, paper, enamel, mother-of-pearl, &c. Pop. 127,621.—Area of dist. 3821 sq. m.; pop. 856,324.

Ahmednag'ar, a town of India, presidency of Bombay, in district of its own name, of commonplace appearance, surrounded by an earthen wall; with manufactures of cotton and silk cloths. Near the city is the fort, built of stone and $1\frac{1}{2}$ mile round. Pop.

32,841; including military, 37,492.—Area of dist. 6666 sq. m.; pop. 751,228.

Ahmed Shah, born 1724, died 1773, founder of the Durâni dynasty in Afghanistan. On the assassination of Nadir he proclaimed himself shah, and set about subduing the provinces surrounding his realm. Among his first acts was the securing of the famed Koh-i-noor diamond, which had fallen into the hands of his predecessor. He crossed the Indus in 1748, and his conquests in northern India culminated in the defeat of the Mahrattas at Panipat (6th Jan. 1761). Affairs in his own country necessitated his withdrawal from India, but he extended his empire vastly in other directions far beyond the limits of modern Afghanistan. He was succeeded by his son Timur.

Ahriman (ä'ri-man; in the Zend *Angromainyus*, 'spirit of evil or annihilation'), according to the dualistic doctrine of Zoroaster, the origin or the personification of evil, sovereign of the Devas or evil spirits, lord of darkness and of death, being thus opposed to Ormuzd (*Ahuramazda*), the spirit of good and of light.

Ah'was, a small Persian town on the river Karun, province of Khuzistan, in the immediate neighbourhood of which are the vast ruins of a city, ascribed to the time of the Parthian empire, extending for 12 miles along the river side.

Ai (ä'ē). See *Sloth*.

Aid, a subsidy paid in ancient feudal times by vassals to their lords on certain occasions, the chief of which were: when their lord was taken prisoner and required to be ransomed, when his eldest son was to be made a knight, and when his eldest daughter was to be married and required a dowry. From the Norman Conquest to the fourteenth century the collecting of aids by the crown was one of the forms of taxation, being latterly regulated by parliament.

Ai'dan, **SAINT**, Bishop of Lindisfarne, was originally a monk of Iona, in which monastery Oswald I., who became king of Northumberland in 635, had been educated. At the request of Oswald, Aidan was sent to preach Christianity to his subjects, and established himself in Lindisfarne as the first of the line of bishops now designated of Durham. He died in 651.

Aide-de-camp (äd-dé-kān), a military officer who conveys the orders of a general to the various divisions of the army on the field of battle, and at other times acts as his secretary and general confidential agent.

Aidin (ä-i-dēn'), or GUZEL HISSAR, a town in Asiatic Turkey, about 60 miles south-east of Smyrna, with which it is connected by rail; has fine mosques and bazaars, is the residence of a pasha, and has an extensive trade in cotton, leather, figs, grapes, &c. Pop. 35,000.

Aigrette' (French), a term used to denote the feathery crown attached to the seeds of various plants, such as the thistle, dandelion, &c. (called in botany *pappus*).—It is also applied to any head-dress in the form of a plume, whether composed of feathers, flowers, or precious stones.

Aigues Mortes (āg mort; L. *Aquæ Mortuæ*, 'dead waters'), a small town of southern France, near the mouths of the Rhone, department of Gard; with ancient walls and castle; near it are lagoons, from which great quantities of salt are made. Pop. 3000.

Aiguille (ā'gwil; Fr., lit. a needle), a name given in the Alps to the needle-like points or tops of granite, gneiss, quartz, and other crystalline rocks and mountain masses; also applied to sharp-pointed masses of ice on glaciers and elsewhere.—It is also the name given to an inaccessible French mountain in Isère, 6500 feet high.

Aigun (i-gun'), a town of China, in Manchuria, on the Amur, with a good trade. Pop. 15,000.

Ai'kin, JOHN, M.D., an English miscellaneous writer, born 1747, died 1822. He practised as physician at Chester, Warrington, and London; turned his attention to literature and published various works of a miscellaneous description, some in conjunction with his sister Mrs. Barbauld, including the popular *Evenings at Home* (1792–95), written with the view of popularizing scientific subjects. His *General Biographical Dictionary* was begun in 1799 and finished in 1815. He was editor of the *Monthly Magazine* from 1796 till 1806.

Ai'kin, LUCY, daughter of the preceding, was born in 1781, and died 1864. In 1810 she published *Poetical Epistles on Women*, which was followed by a number of books for the young. In 1818 appeared her *Memoirs of the Court of Queen Elizabeth*, a very popular work. She afterwards produced similar works on the reigns of James I. (1822) and Charles I. (1833), and a *Life of Addison* (1843). In 1824 she had published the literary remains and biography of her father. She carried on an interesting correspondence with Dr. Channing, which has been published.

Aikman, WILLIAM, an eminent Scottish portrait-painter; born in Forfarshire in 1682, died in 1731. He studied at Edinburgh and in Italy, visited Turkey, and spent the later portion of his life in London, where he enjoyed the friendship of most of the distinguished men of Queen Anne's time.

Ailan'to, AILANTHUS, a tree, genus *Ailantus*, nat. ord. Simarubaceæ. The *A. glandulōsa*, a large and handsome tree, with pinnate leaves one or two feet long, is a native of China, but has been introduced into Europe and North America, where it is in favour for its elegant foliage. A species of silk-worm, the ailanthus silkworm (*Saturnia cynthia*), feeds on its leaves, and the material produced, though wanting the fineness and gloss of mulberry silk, is produced at less cost, and is more durable. The wood is hard, heavy, glossy, and susceptible of a fine polish.

Ail'red (contracted form of Ethelred), a religious and historical writer, supposed to have been born in 1097, but whether in Scotland or in England is not known, died 1166; abbot of Rievaulx, in the north riding of Yorkshire. Wrote lives of Edward the Confessor and St. Margaret, Queen of Scotland, *Genealogy of the Kings of England*, the *Battle of the Standard*, &c.

Ailsa Craig, a rocky islet in the Firth of Clyde, 10 miles from the coast of Ayr, of a conical form, 1097 feet high, and about 2 miles in circumference, precipitous on all sides except the north-east, where alone it is accessible, frequented by innumerable sea-fowl, including solan-geese, and covered with grass. On it is a lighthouse.

Ailu'rus. See *Panda*.

Aimard (ā-mär), GUSTAVE, French novelist; born 1818, died 1883. He lived for ten years among the Indians of North America, and wrote a number of stories dealing with Indian life, which have been popular in English translations.

Ain (an), a south-eastern frontier department of France, mountainous in the east (ridges of the Jura), flat or undulating in the west, divided into two nearly equal parts by the river Ain, a tributary of the Rhone; area, 2239 square miles. Capital, Bourg. Pop. 1891, 356,907.

Ainmiller (in'mil-er), MAX EMANUEL, a German artist who may be regarded as the restorer of the art of glass-painting; born 1807, died 1870. As inspector of the state institute of glass-painting at Munich he

raised this art to a high degree of perfection by the new or improved processes introduced by him. Under his supervision this establishment (which latterly became his own) produced a vast number of painted windows for ecclesiastical and other buildings, among the principal being a series of forty windows, containing 100 historical and scriptural pictures in Glasgow Cathedral. His son Heinrich, born 1837, has followed in his father's footsteps.

Ainos (ī'nōz; that is, men), the native name of an uncivilized race of people inhabiting the Japanese island of Yesso, as also Saghalien, and the Kurile Islands, and believed to be the aboriginal inhabitants of Japan. They do not average over 5 feet in height, but are strong and active. They have matted beards 5 or 6 inches in length, and black hair which they allow to grow till it falls over their shoulders. Their complexion is dark brown, approaching to black. They worship the sun and moon, and pay reverence to the bear. They support themselves by hunting and fishing.

Ainsworth, HENRY, a Puritan divine and scholar; born 1571, died 1622. He passed great part of his life in Amsterdam, being from 1610 pastor of a 'Brownist' church there (the Brownists being forerunners of the Independents). He was a voluminous writer, a controversialist and commentator, and a thorough Hebrew scholar.

Ainsworth, ROBERT, born in Lancashire, 1660, acquired a competence from keeping a private school in or near London, and died there in 1743. Among other learned works he compiled the well-known Latin and English Dictionary, first published in 1736, which passed through many editions, but is now entirely superseded.

Ainsworth, WILLIAM FRANCIS, an English physician, geologist, and traveller; born 1807. He was surgeon and geologist to the Euphrates expedition under Col. Chesney, and has published *Researches in Assyria, Babylonia, and Chaldæa* (1838), *Travels in Asia Minor, Mesopotamia, and Armenia* (1842), *Travels in the Track of the Ten Thousand Greeks* (1844), &c.

Ainsworth, WILLIAM HARRISON, an English novelist; born 1805, died 1882. He was the son of a Manchester solicitor and intended for the profession of law, but devoted himself to literature. He wrote *Rookwood* (1834), *Jack Sheppard* (1839), and about forty other novels, including *Guy Fawkes*, *Tower of London*, *Windsor Castle*,

Lancashire Witches, *Flitch of Bacon*, &c., none of them likely to live long.

Ain-Tab (ā-in-tāb'), a town of Northern Syria, 60 miles north of Aleppo; with manufactures of cottons, woollens, leather, &c., and an extensive trade. There is here an American Protestant mission. Pop. 20,000.

Air, the gaseous substance of which our atmosphere consists, being a mechanical mixture of 79·19 per cent by measure of nitrogen and 20·81 per cent of oxygen. The latter is absolutely essential to animal life, while the purpose chiefly served by the nitrogen appears to be to dilute the oxygen. Oxygen is more soluble in water than nitrogen, and hence the air dissolved in water contains about 10 per cent more oxygen than atmospheric air. The oxygen therefore available for those animals which breathe by gills is somewhat less diluted with nitrogen, but it is very much diluted with water. For the various properties and phenomena connected with air see such articles as *Atmosphere*, *Aëronautics*, *Air-pump*, *Barometer*, *Combustion*, *Respiration*, &c.

Air, in music (in Italian, *aria*), a continuous melody, in which some lyric subject or passion is expressed. The lyric melody of a single voice, accompanied by instruments, is its proper form of composition. Thus we find it in the higher order of musical works; as in cantatas, oratorios, operas, and also independently in concertos.—**AIR** is also the name often given to the upper or most prominent part in a concerted piece, and is thus equivalent to *treble*, *soprano*, &c.

Air, or **ASBEN**. See *Asben*.

Aira. See *Hair-grass*.

Air Beds and Cushions, often used by the sick and invalids, are composed of india-rubber or of cloth made air-tight by a solution of india-rubber, and when required for use filled with air, which thus supplies the place of the usual stuffing materials. They tend to prevent bed sores from continuous lying in one position. They are also cheap and easily transported, as the bed or cushion, when not in use, can be packed in small compass, to be again inflated with air when wanted.

Air-bladder. See *Swimming-bladder*.

Air-cells, cavities in the cellular tissue of the stems and leaves of plants which contain air only, the juices of the plants being contained in separate vessels. They are largest and most numerous in aquatic plants, as in the *Vallisneria spirālis* and the *Vic-*

toria regia, the gigantic leaves of which latter are buoyed up on the surface of the water by their means.—The minute cells in the lungs of animals are also called air-cells. There are also air-cells in the bodies of birds. They are connected with the respiratory system, and are situated in the cavity of the thorax and abdomen, and sometimes extend into the bones. They are most fully developed in birds of powerful and rapid flight, such as the albatross.



Air-cells in Gulf-weed (*Sargassum vulgare*).

Aird, THOMAS, a Scottish poet and miscellaneous writer, friend of Professor Wilson, De Quincey, and Carlyle, long editor of a newspaper in Dumfries; born 1802, died 1876. He wrote the *Devil's Dream* on Mount Aksbeck, *The Old Bachelor*, &c.

Airdrie, a parliamentary burgh of Scotland (Falkirk district), in Lanarkshire, 11 miles east of Glasgow, in the centre of a rich mining district, with a large cotton-mill, foundries and machine-shops, breweries, &c., and collieries and iron-works in its vicinity. Pop. 1891, 15,133.

Air-engine, an engine in which air heated, and so expanded, or compressed air is used as the motive power. A great many engines of the former kind have been invented, some of which have been found to work pretty well where no great power is required. They may be said to be essentially similar in construction to the steam-engine, though of course the expansibility of air by heat is small compared with the expansion that takes place when water is converted into steam. Engines working by compressed air have been found very useful in mining, tunnelling, &c., and the compressed air may be conveyed to its destination by means of pipes. In such cases the waste air serves for ventilation and for reducing the oppressive heat.

Aire-sur-l'Adour (ār-sūr-lā-dör), a small but ancient town of France, department of Landes, the see of a bishop. Pop. 3000.

Aire-sur-la-Lys (ār-sūr-lā-lē), an old fortified town of France, department of Pas de Calais, 10 miles south-east of St. Omer. Pop. 5000.

Air-gun, an instrument for the projection of bullets by means of condensed air, generally either in the form of an ordinary gun, or of a pretty stout walking-stick, and about

the same length. A quantity of air being compressed into the air-chamber by means of a condensing syringe, the bullet is put in its place in front of this chamber, and is propelled by the expansive force of a certain quantity of the compressed air, which is liberated on pressing the trigger.

Airolò (ā-i-rō'lō), a small town of Switzerland, canton Ticino, at the southern end of the St. Gothard Tunnel, and the first place on this route at which Italian is spoken. Pop. 3678.

Air-plants, or **EPIPHYTES**, are plants that grow upon other plants or trees, apparently without receiving any nutriment otherwise than from the air. The name is restricted to flowering plants (mosses or lichens being excluded) and is suitably applied to many species of orchids. The conditions necessary to the growth of such plants are excessive heat and moisture, and hence their chief localities are the damp and shady tropical forests of Africa, Asia, and America. They are particularly abundant in Java and tropical America.

Air-pump, an apparatus by means of which air or other gas may be removed from an inclosed space; or for compressing air within an inclosed space. An ordinary suction-pump for water is on the same principle as the air-pump; indeed, before water reaches the top of the pipe the air has been pumped out by the same machinery which pumps the water. An ordinary suction-pump consists essentially of a cylinder or barrel, having a valve opening from the pipe through which water is to rise and a valve opening into the outlet pipe, and a piston fitted to work in the cylinder (the outlet valve may be in the piston). (See *Pump*.) The arrangement of parts in an air-pump is quite similar. The barrel of an air-pump fills with the air which expands from the *receiver* (that is, the vessel from which the air is being pumped), and consequently the quantity of air expelled at each stroke is less as the exhaustion proceeds, the air getting more and more rarefied. Suppose that the receiver (so called because it *receives* objects to be experimented on) is exactly as large as the barrel; by the first stroke there is just half the air removed, by the second there is one-fourth, by the third there is an eighth, and so on. Suppose the barrel is $\frac{1}{3}$ of the receiver as to volume. On raising the piston the air which filled the receiver now fills both barrel and receiver, so that $\frac{1}{4}$ is removed at the first stroke, $\frac{1}{8}$ of

AIR-PUMP — AIRY.

the remaining $\frac{3}{4}$ is removed at the second stroke—that is, $\frac{3}{16}$, and $\frac{1}{4}$ of $\frac{9}{16}$ at the third stroke, and so on. Fig. 1 represents the essential parts of a good air-pump in section. E is the receiver, F is a mercurial pressure-gauge, which indicates the extent of exhaustion;

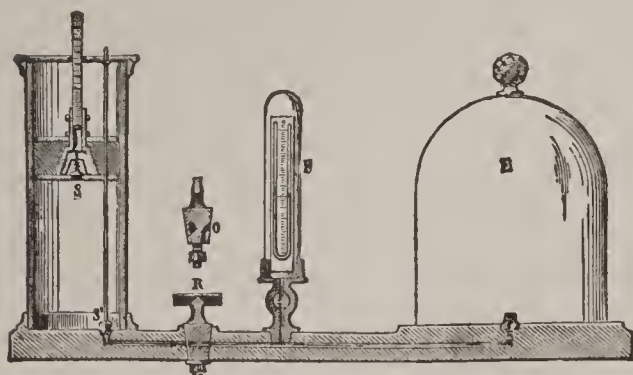


Fig. 1.—Air-pump (sectional view).

R is a cock by means of which air may be readmitted to the receiver or by means of which the receiver may be shut off from the pump-barrel. s' is the inlet valve of the barrel; and, inasmuch as the tension of the air in the receiver after some strokes would

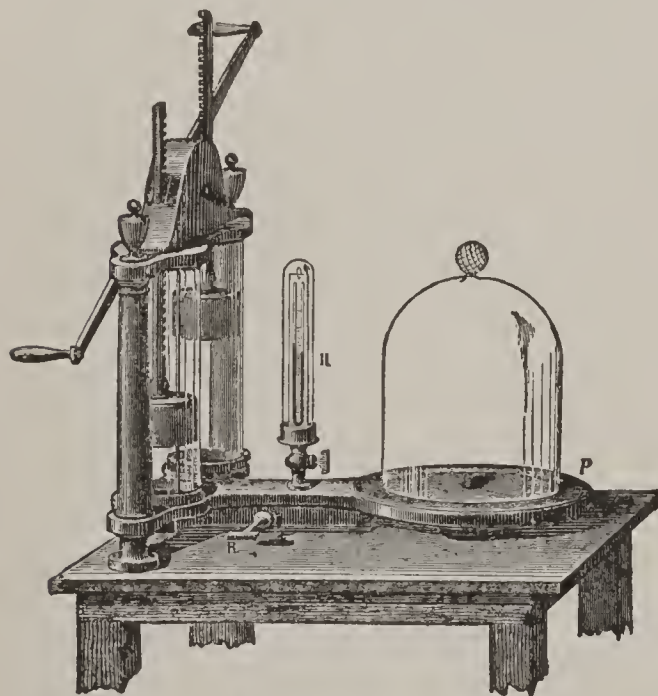


Fig. 2.—Air-pump.

not be sufficient to lift a valve, this valve is opened by means of the rod which passes up through the piston. The outlet valve s is kept down by a light spiral spring; it opens when, on the space diminishing in the barrel by the descent of the piston, the contained air has a sufficient pressure. Fig. 2 shows a similar pump in perspective (a double-barrelled pump); P is the plate on which the

receiver is placed, H the pressure-gauge, R the readmission cock. The pressure-gauge is merely a siphon barometer inclosed in a bell-shaped vessel of glass communicating with the receiver. This barometer consists of a bent tube containing mercury, one end being closed, the other open. As the air is exhausted the smaller is the difference between the height of the mercury in the two branches of the tube, and a complete vacuum would be indicated if the mercury stood at the same level in both.—Air-pumps for compressing air are constructed on the same principle but act the reverse way.—Many interesting experiments may be made with the air-pump. If an animal is placed beneath the receiver, and the air exhausted, it dies almost immediately; a lighted candle under the exhausted receiver immediately goes out. Air is thus shown to be necessary to animal life and to combustion. A bell, suspended from a silken thread beneath the exhausted receiver, on being struck cannot be heard. If the bell be in one receiver from which the air is not exhausted, but which is within an exhausted receiver, it still cannot be heard. Air is therefore necessary to the production and to the transmission of sound. A shrivelled apple placed beneath an exhausted receiver becomes as plump as if quite fresh, being thus shown to be full of elastic air. The air-pump was invented by Otto von Guericke, burgomaster of Magdeburg, about the year 1654.

Airy, SIR GEORGE BIDDELL, a distinguished English astronomer, was born at Alnwick, June 27, 1801, and educated at Hereford, Colchester, and Trinity College, Cambridge, where he was senior wrangler in 1823. At Cambridge he was Lucasian professor of mathematics, and subsequently Plumian professor of astronomy and experimental philosophy, in the latter capacity having charge of the observatory. In 1835 he was appointed astronomer-royal, and as such his superintendence of the observatory at Greenwich was able and successful. He resigned this post with a pension in 1881. He has written largely and made numerous valuable investigations on subjects connected with astronomy, physics, and mathematics; and has received many honours from academic and learned bodies. Among separate works published by him may be mentioned *Popular Astronomy*, *On Sound and Atmospheric Vibrations*, *A Treatise on Magnetism*, *On the Undulatory Theory of Optics*, *On Gravitation*. Died Jan. 2, 1892.

Aisle (il; from *L. ala*, a wing), in architecture, one of the lateral divisions of a church in the direction of its length, separated from the central portion or nave by piers or pillars. There may be one aisle or more on each side of the nave. The cathedrals at Antwerp and Paris have seven aisles in all. The nave is sometimes called the central aisle. See *Cathedral*.

Aisne (ān), a north-eastern frontier department of France; area, 2838 sq. miles. It is an undulating, well-cultivated, and well-wooded region, chiefly watered by the Oise in the north, its tributary the Aisne in the centre, and the Marne in the south. It contains the important towns of St. Quentin, Laon (the capital), Soissons, and Château Thierry. Pop. 1891, 545,493.

Aiva'li, or KIDONIA, a seaport of Asiatic Turkey, on the Gulf of Adramyti, 66 miles north by west of Smyrna, carrying on an extensive commerce in olive-oil, soap, cotton, &c. Pop. 30,000.

Aix (āks), a town of Southern France, department Bouches-du-Rhône, on the river Arc, the seat of an archbishop. It is well built, has an old cathedral and other interesting buildings, high-class educational institutions, library (over 100,000 vols.), museum, &c.; manufactures of cotton, woollens, oil, soap, hats, flour, &c.; warm springs, now less visited than formerly. Aix was founded in 123 B.C. by the Roman consul Caius Sextius Calvinus, and from its mineral springs was called *Aque Sextie* (Sextian Waters). Between this town and Arles Marius gained his great victory over the Teutons, 102 B.C. In the middle ages the counts of Provence held their court here, to which the troubadours used to resort. Pop. 19,686.

Aix, or AIX-LES-BAINS (āks-lā-ban), a finely situated village of France, department of Savoie, 8 miles north of Chambéry, on the side of a fertile valley, with much-frequented hot springs known to the Romans by the name of *Aque Gratiana*, and with ruins of a Roman triumphal arch, and of a temple of Diana. Pop. 2635.

Aix-la-Chapelle (āks-lā-shā-pel; Ger. *Aachen*), a city of Rhenish Prussia, 38 miles west by south of Cologne, pleasantly situated in a fine vale watered by the Wurm, formerly surrounded by ramparts, now converted into pleasant promenades. It is well built, and though an ancient town has now quite a modern appearance. The most important building is the cathedral,

the oldest portion of which, often called the nave, was erected in the time of Charles the Great (Charlemagne) as the palace chapel about 796. It is in the Byzantine style, and consists of an octagon, surrounded by a sixteen-sided gallery and surmounted by a cupola, in the middle being the tomb of Charlemagne. The adjoining Gothic choir, begun in 1353 and finished in 1413, forms the other chief division of the cathedral; it is lofty and of great elegance, and has fine painted windows. Aix-la-Chapelle, with the adjoining Burtscheid, which may be considered a suburb, is a place of great commerce and manufacturing industry, the chief productions being woollen yarns and cloths, needles, machinery, cards (for the woollen manufacture), railway and other carriages, cigars, chemicals, silk goods, hosiery, glass, soap, &c. A considerable portion of its importance and prosperity arises from the influx of visitors to its springs and baths, there being a number of warm sulphur springs here, and several chalybeate springs, with ample accommodation for strangers. — Aix-la-Chapelle was known to the Romans as *Aquisgranum*. It was the favourite residence of Charles the Great, who made it the capital of all his dominions north of the Alps, and who died here in 814. During the middle ages it was a free imperial city and very flourishing. Thirty-seven German emperors and eleven empresses have been crowned in it, and the imperial insignia were preserved here till 1795, when they were carried to Vienna. Pop. 1890, 103,470. *Congress of Aix-la-Chapelle*, a congress held in 1818, by which the army of the allies in France was withdrawn after France had paid the contribution imposed at the peace of 1815, and independence restored to France.—A *treaty* of peace concluded at this city, May 2, 1668, as a result of the Triple Alliance, put an end to the war carried on against Spain by Louis XIV. in 1667, after the death of his father-in-law, Philip IV., in support of his claims to a great part of the Spanish Netherlands, which he urged in the name of his queen, the infanta Maria Theresa. By this France obtained Lille, Charleroi, Douai, Tournai, Oudenarde, &c. The *second peace* of Aix-la-Chapelle, October 18, 1748, terminated the Austrian war of succession.

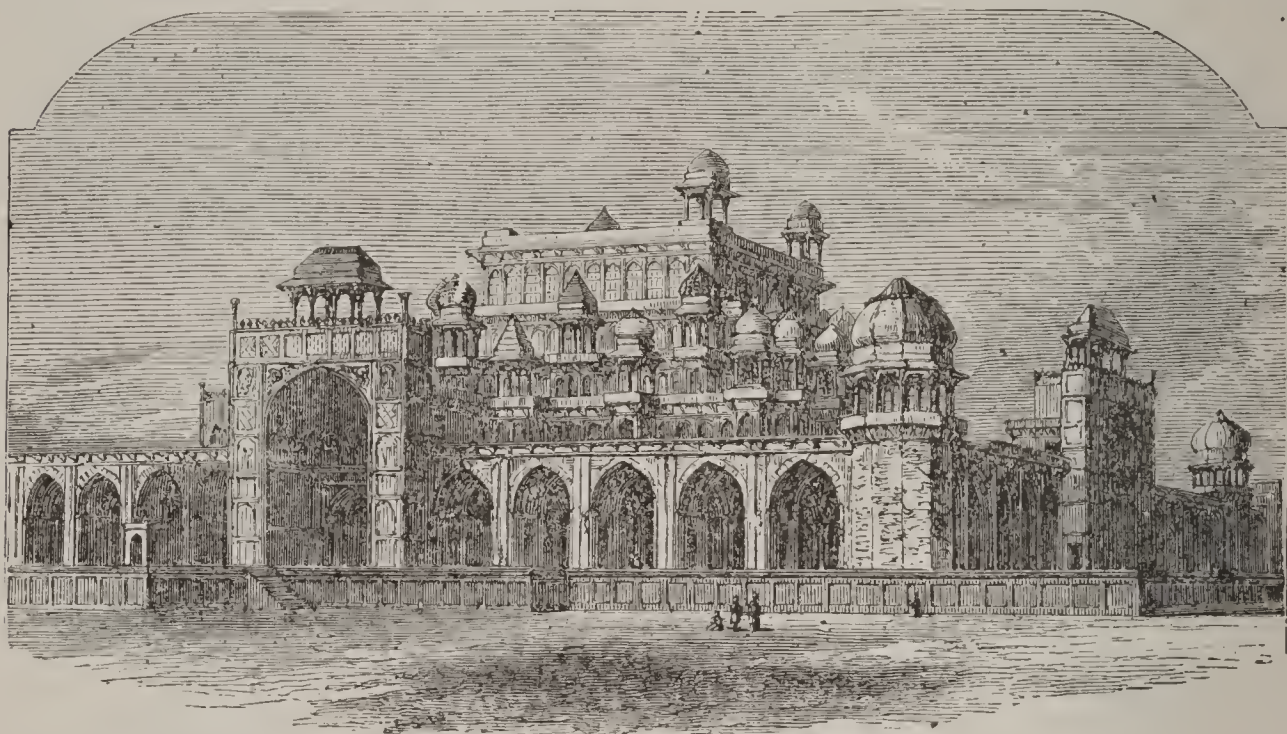
Ajaccio (ā-yāch'ō), the capital of Corsica, on the south-west coast of the island, on a tongue of land projecting into the Gulf of

Ajaccio, the birthplace of Napoleon and the seat of a bishop, with coral and sardine fisheries, and a considerable trade. Pop. 15,351.

Ajan'ta, a village and ravine of India, in the Nizam's Dominions, 24 miles north of Assaye. The ravine, 4 miles N.W. of the village, is celebrated for its cave temples, twenty-nine in number, excavated out of a wall of almost perpendicular rock about 250 feet high. They are all richly ornamented

with sculpture, and covered with highly-finished paintings.

A'jax (Gr. *Aias*), the name of two Grecian chiefs who fought against Troy, the one being son of Oileus, the other son of Telamon. The latter was from Salamis, and sailed with twelve ships to Troy, where he is represented by Homer as the boldest and handsomest of the Greeks, after Achilles. On the death of Achilles, when his arms,



Mausoleum of the Emperor Akbar at Secundra.

which Ajax claimed, were awarded to Ulysses, he became insane and killed himself. This is the subject of Sophocles's tragedy Ajax.

Ajmeer', AJMIR, or AJMER, a British commissionership in India, Rajputána, divided into the two districts of Ajmeer and Mairwara; area, 2711 sq. miles. The surface is hilly in the north and west, where there is a branch of the Aravali range, but level in the south and east. The soil is partly fertile, but there occur large barren sandy plains. Pop. 460,722.—AJMEER, the capital, an ancient city, a favourite residence of the Mogul emperors, is 279 miles S.W. of Delhi, at the foot of Taragarh Hill (2853 feet), on which is a fort. It is surrounded by a wall, and possesses a government college, as also Mayo College for Rajpoot nobles, a Scottish mission, a mosque that forms one of the finest specimens of early Mohammedan architecture extant, and an old palace of Akbar, now the treasury; trade in cotton, sugar, salt, &c. Pop. 34,763.

Ajowan' (*Ptychotis Ajowan*), an umbelliferous plant cultivated in India, Persia, and Egypt, the seeds of which are used in cookery and in medicine, having carminative properties.

Aju'ga, a genus of plants. See *Bugle*.

Aj'utage, a short tube of a tapering shape fitting into the side of a reservoir to regulate the discharge of the water. Also, the nozzle of a tube for regulating the discharge of water to form a jet d'eau.

Akabah', GULF OF, an arm of the Red Sea, on the east side of the Peninsula of Sinai, which separates it from the Gulf of Suez; nearly 100 miles long. The village of Akabah, at the northern extremity of the gulf, is supposed to be the *Ezion-geber* of the Old Testament.

Akaroid Resin, a resin obtained from some of the grass-trees of Australia, used in varnishes.

Ak'bar (that is, 'very great'), a Mogul emperor, the greatest Asiatic prince of

modern times. He was born at Amerkote, in Sind, in 1542, succeeded his father, Humayun, at the age of thirteen, and governed first under the guardianship of his minister, Beyram, but took the chief power into his own hands in 1560. He fought with distinguished valour against his foreign foes and rebellious subjects, conquering all his enemies, and extending the limits of the empire further than they had ever been before, although on his accession they embraced only a small part of the former Mogul Empire. His government was remarkable for its mildness and tolerance towards all sects; he was indefatigable in his attention to the internal administration of his empire, and instituted inquiries into the population, character, and productions of each province. The result of his statistical labours, as well as a history of his reign, were collected by his minister, Abul Fazl, in a work called Akbar-Nameh (Book of Akbar), the third part of which, entitled Ayini-Akbari (Institutes of Akbar), was published in an English translation at Calcutta (1783-86, three vols.), and reprinted in London. He died in 1605. His mausoleum at Secundra, near Agra, is a fine example of Mohanmedan architecture.

Akee' (*Blighia sapida*), a tree of the nat. order Sapindaceæ, much esteemed for its fruit. The leaves are somewhat similar to those of the ash; the flowers are small and white, and produced in branched spikes. The fruit is lobed and ribbed, of a dull orange colour, and contains several large black seeds, embedded in a succulent and slightly bitter arillus of a pale straw colour, which is eaten when cooked. The akee is a native of Guinea, from whence it was carried to the West Indies by Captain Bligh in 1793.

A Kempis, THOMAS. See *Thomas à Kempis*.

Aken (ä'ken), a Prussian town, province of Saxony, on the left bank of the Elbe, with manufactures of tobacco, cloth, beet-root sugar, leather, &c. Pop. 5284.

A'kenside, MARK, a poet and physician, born in 1721, at Newcastle-upon-Tyne; died in London in 1770. He was the son of a butcher, and was sent to the University of Edinburgh to qualify himself for the Presbyterian ministry, but chose the study of medicine instead. After three years' residence at Edinburgh he went to Leyden, and in 1744 became Doctor of Physic. In the same year he published the *Pleasures of Imagination*, which he is said to have

written in Edinburgh. Having settled in London, he became a fellow of the Royal Society and was admitted into the College of Physicians. In 1759 he was appointed first assistant and afterwards head physician to St. Thomas's Hospital. Latterly he wrote little poetry, but published several medical essays and observations. The place of Akenside as a poet is not very high, though his somewhat cumbrous and cloudy *Pleasures of Imagination* was once considered one of the most pleasing didactic poems in our language.

Akermann', a seaport of Southern Russia, in Bessarabia, near the mouth of the Dniester, with a good port. The vicinity produces quantities of salt and also fine grapes, from which excellent wine is made. A treaty was signed here, Oct. 6, 1826, between Russia and the Porte, by which Moldavia, Walachia, and Servia were released from all but nominal dependence on Turkey. Pop. 29,609.

Akhalzik, ACHALZIK (ä-häl'tsik), a town of Russia in Asia, in the Trans-Caucasian government of Tiflis, 97 miles west of Tiflis, with a citadel. It was taken by the Russians in 1828. Pop. 15,977.

Ak-Hissar ('White Castle'), a town in Asiatic Turkey, 46 miles N.E. of Smyrna, occupying the site of the ancient Thyatira, relics of which city are here abundant. Here the Emperor Valens defeated the usurper Procopius in 366, and Murad defeated the Prince of Aidin in 1425. Pop. 10,000.

Akhtyrka (ä-h-tir'kä), a cathedral town of southern Russia, gov. Kharkov, with a good trade and some manufactures. Pop. 23,892.

Akjermann (äk-yer-män'). Same as *Akermann*.

Akkas, a dwarfish race of Central Africa, dwelling in scattered settlements to the north-west of Lake Albert Nyanza, about lat. 3° N., lon. 29° E. Their height averages about 4½ feet; they are of a brownish

or coffee colour; head large, jaws projecting (or prognathous), ears large, hands small.



Akka—African Tribe.

They are timid and suspicious, and live almost entirely by the chase, being exceedingly skilful with the bow and arrow.

Akmollinsk', a Russian province in Central Asia, largely consisting of steppes and wastes; the rivers are the Ishim and Sari-Su; and it contains the larger part of Lake Balkash. Area of 210,000 sq. m. Pop. 463,347.—**AKMOLLINSK**, the capital, is a place of some importance for its caravan trade. Pop. 3130.

Ako'la, a town of India, in Berar, the residence of the commissioner of Berar, on the river Morna, 150 miles w. by s. of Nagpur; with walls and a fort, and some trade in cotton. Pop. 16,608.

Ak'ron, a town of the United States, in Ohio, 100 miles N.E. of Columbus, on an elevated site. Being furnished with ample water-power by the Little Cuyahoga it possesses large flour-mills, woollen factories, manufactures of iron goods, &c. In the vicinity extensive beds of mineral paint are worked. Pop. in 1890, 27,601.

Aksu' ('white water'), a town of Eastern or Chinese Turkestan, 300 miles from Kashgar, in the valley of the Aksu. It is an important centre of trade between Russia, China, and Tartary, and has manufactures of cotton cloth, leather, and metal goods. Formerly the residence of the kings of Kashgar and Yarkand. Pop. 30,000.

Akyab', a seaport of Lower Burmah, capital of the province of Arracan, at the mouth of the river Kuladan or Akyab, of recent upgrowth, well built, possessing a good harbour, and carrying on an important trade, its chief exports being rice and petroleum. Pop. 33,998.

Alabama (al-a-bá'ma), one of the United States, bounded by Tennessee, Georgia, Florida, the Gulf of Mexico, and Mississippi; area 52,250 square miles. The southern part, bordering on the Gulf of Mexico and Florida, is low and level, and wooded largely with pine, hence known as the 'pine-woods region;' the middle is hilly, with some tracts of level sand or prairies; the north is broken and mountainous. The state is intersected by the rivers Alabama, Tombigbee, Mobile, Coosa, Tallapoosa, Tennessee, &c., some of them navigable for several hundred miles. The soil is various, being in some places, particularly in the south, sandy and barren, but in most parts is fertile, especially in the river valleys and in the centre, where there is a very fertile tract known as the 'cotton belt.' The climate in general is warm, and

in the low-lying lands skirting the rivers is rather unhealthy. In the more elevated parts it is healthy and agreeable, the winters being mild and the summers tempered by breezes from the Gulf of Mexico. The staple production is cotton, especially in the middle and south, where rice and sugar are also grown; in the north the cereals (above all maize) are the principal crops. Alabama possesses extensive beds of iron ore and coal, with marble, granite, and other minerals; and coal and iron mining, and the smelting and working of iron, receive considerable attention. The manufacture of cotton goods is extensively carried on. In the production of pig-iron, Alabama now ranks as third State in the Union. The State sends eight representatives to Congress. Its principal towns are Montgomery, the seat of government, and Mobile, the chief port. There is a state university at Tuscaloosa, a university connected with the Methodist Episcopal body, several state normal colleges, besides professional schools, &c., in the principal towns. Alabama became a State in 1819. Pop. in 1890, 1,513,017, of whom 681,431 were coloured.

Alabama, a river of the United States, in the state of Alabama, formed by the junction of the Coosa and the Tallapoosa. After a course of 300 miles it joins the Tombigbee and assumes the name of the Mobile.

Alabama, **THE**, a ship built at Birkenhead to act as a privateer in the service of the Confederate States of North America during the civil war begun in 1861. She was a wooden screw steamer with two engines of 350 horse-power each, 1040 tons burden, and carried eight 32-pounders. Before she was launched her destination was made known to the British government, but owing to some legal formalities the orders given for her detention did not reach Liverpool till the day after she had left that port (29th July, 1862). She received her armament and stores at the Azores, and entered on her destructive career, capturing and burning merchant vessels, till she was sunk in a fight with the Federal war steamer *Kearsarge*, off Cherbourg, 19th June, 1864. As early as the winter of 1862 the United States government declared that they held themselves entitled at a suitable period to demand full compensation from Britain for the damages inflicted on American property by the *Alabama* and several other cruisers that had been built, supplied, or recruited in British ports or waters. After a long

series of negotiations it was agreed to submit the final settlement of the question to a court of arbitration, consisting of representatives of Britain, and the United States, and of three other members, appointed by the King of Italy, the President of Switzerland, and the Emperor of Brazil. This court met at Geneva, 17th December, 1871, and a claim for indirect damages to American commerce having been abandoned by the United States government, the decree was given in September, 1872, that Britain was liable to the United States in damages to the amount of 15,500,000 dollars (about £3,229,200). After all awards were made to private claimants about 8,000,000 dollars still remain unclaimed.

Alabas'ter, a name applied to a granular variety of gypsum or hydrated sulphate of lime. It was much used by the ancients for the manufacture of ointment and perfume boxes, vases, and the like. It has a fine granular texture, is usually of a pure white colour, and is so soft that it can be scratched with the nail. It is found in many parts of Europe; in great abundance and of peculiarly excellent quality in Tuscany. From the finer and more compact kinds vases, clock-stands, statuettes, and other ornamental articles are made, and from inferior kinds the cement known as plaster of Paris. A variety of carbonate of lime, closely resembling alabaster in appearance, is used for similar purposes under the name of *Oriental alabaster*. It is usually stalagmitic or stalactitic in origin and is often of a yellowish colour. It may be distinguished from true alabaster by being too hard to be scratched with the nail.

Alac'taga (*Alactāga jacūlus*), a rodent mammal, closely allied to the jerboa, but somewhat larger in size, with a still longer tail. Its range extends from the Crimea and the steppes of the Don across Central Asia to the Chinese frontier.

Alago'as, a maritime province of Brazil; area, 11,640 sq. miles; pop. about 400,000. — **ALAGOAS**, the former capital of the province, is situated on the south side of an arm of the sea, about 20 miles distant from Maceio, to which the seat of government was transferred in 1839. Pop. about 4000.

Alais (ā-lā), a town of Southern France, department of Gard, 87 miles N.W. of Marseilles, with coal, iron, and lead mines, which are actively worked, and chalybeate springs, which have many visitors during the autumn months. Pop. 16,945.

Alajuela (ā-lā-hū-ā'lā), a town of Central America, capital of the state of Costa Rica. Pop. 12,000.

Ala-Kul, a lake in Russian Central Asia, near the borders of Mongolia, in lat. 46° N. lon. 81° 40' E.; area, 660 sq. m.

Alamanni. See *Alemanni*.

Alaman'ni, **LUIGI**, an Italian poet, of noble family, born at Florence in 1495. Suspected of conspiring against the life of Cardinal Giulio Medici, who then governed Florence in the name of Pope Leo X., he fled to Venice, and when the cardinal ascended the papal chair under the name of Clement VII. he took refuge in France, where he henceforth lived, being employed by Francis I. and Henry II. in several important negotiations. He died in 1556.

Alameda, Alameda county, Cal., a favorite suburban residence for San Francisco business men. It is situated on the Bay of San Francisco about 8 miles from the city, with which it is connected by a steam ferry. It is celebrated for its orchards and gardens. Pop. in 1890, 11,165.

Al'amo, a fort in Bexar county, Texas, U.S., celebrated for the resistance its occupants (140 Texans) made to a Mexican force of 4000 from 23d February to 6th March, 1836. At the latter date only six Texans remained alive, and on their surrendering they were slaughtered by the Mexicans.

Al'amos, a town of Mexico, state of Sonora, well built, the capital of a mining district. Pop. 12,000.

Åland (o'land) **Islands**, a numerous group of islands and islets, about eighty of which are inhabited, belonging to Russia, situated in the Baltic Sea, near the mouth of the Gulf of Finland; area, 468 square miles. The principal island, Åland, distant about 30 miles from the Swedish coast, is 18 miles long and about 14 broad. It has a harbour capable of containing the whole Russian fleet. The fortress of Bomarsund, here situated, was destroyed by an Anglo-French force in August, 1854. The inhabitants, who are of Swedish extraction, employ themselves mostly in fishing. The islands were ceded by Sweden to Russia in 1809. Pop. 18,000.

Ala'ni, or **ALANS**, one of the warlike tribes which migrated from Asia westward at the time of the decline of the Roman empire. They are first met with in the region of the Caucasus, where Pompey fought with them. From this centre they spread over the south of modern Russia to the confines of the Roman empire. About

the middle of the fifth century they joined the Vandals, among whom they become lost to history.

Alarcon' Y Mendo'za, DON JUAN RUIZ DE, one of the most distinguished dramatic poets of Spain, born in Mexico about the beginning of the seventeenth century. He came to Europe about 1622, and in 1628 he published a volume containing eight comedies, and in 1634 another containing twelve. One of them, called *La Verdad Sospechosa* (The Truth Suspected), furnished Corneille with the groundwork and greater part of the substance of his *Menteur*. His *Tejador de Segovia* (Weaver of Segovia) and *Las Paredes Oyen* (Walls have Ears) are still performed on the Spanish stage. He died in 1639.

Al'aric I., King of the Visigoths, was born about the middle of the fourth century, and is first mentioned in history in A.D. 394, when Theodosius the Great gave him the command of his Gothic auxiliaries. The dissensions between Arcadius and Honorius, the sons of Theodosius, inspired Alaric with the intention of attacking the Roman empire. In 396 he ravaged Greece, from which he was driven by the Roman general Stilicho, but made a masterly retreat to Illyria, of which Arcadius, frightened at his successes, appointed him governor. In 400 he invaded Italy, but was defeated by Stilicho at Pollentia (403), and induced to transfer his services from Arcadius to Honorius on condition of receiving 4000 lbs. of gold. Honorius having failed to fulfil this condition, Alaric made a second invasion of Italy, during which he besieged Rome thrice. The first time (408) the city was saved by paying a heavy ransom; the second (409) it capitulated, and Honorius was deposed, but shortly afterwards restored. His sanction of a treacherous attack on the forces of Alaric brought about the third siege, and the city was taken 24th August, 410, and sacked for six days, Alaric, however, doing everything in his power to restrain the violence of his followers. He quitted Rome with the intention of reducing Sicily and Africa, but died at Cosenza in 410.

Al'aric II., King of the Visigoths from 484 to 507 A.D. At the beginning of his reign the dominions of the Visigoths were at their greatest extent, embracing three-fourths of the modern Spain and all Western Gaul to the south of the Loire. His unwarlike character induced Clovis, King of the Franks, to invade the kingdom of the

Visigoths. In a battle near Poitiers (507) Alaric was slain and his army completely defeated. The *Breviarium Alaricianum*, a code of laws derived exclusively from Roman sources, was compiled by a body of Roman jurists at the command of this King Alaric.

Alarm, in military language, a signal, given by beat of drum, bugle-call, or firing of a gun, to apprise a camp or garrison of a surprise intended or actually made by the enemy. A place, called the *alarm-post*, is generally appointed at which the troops are to assemble when an alarm is given.—*Alarm* is also the name given to several contrivances in which electricity is made use of, as a *fire-alarm*, by which intelligence is at once conveyed to the proper quarter when a fire breaks out; a *burglar-alarm*, an arrangement of wires and a battery in a house intended to set a bell or bells ringing should a burglar attempt to gain entrance.

Alarm-clock, one which can be set so as to ring loudly at a certain hour to wake from sleep or excite attention.

Ala-Shehr (à-là-shār'; ancient *Philadelphia*), a town in Turkey in Asia, 76 miles east of Smyrna, famous as the seat of one of the first Christian churches, and still having a vast number of interesting remains of antiquity, consisting of fragments of beautiful columns, sarcophagi, fountains, &c. It is a place of some importance, carrying on a thriving trade by caravans, chiefly with Smyrna. Pop. 15,000.

Alas'ka, a territory belonging to the United States, comprising all that portion of the north-west of North America which lies west of the 141st meridian of west longitude, together with an irregular strip of coast land (and the adjacent islands), extending south to lat. 54° 40' N., and lying between the British territories and the Pacific; total area, about 528,000 sq. m. The territory is watered by several rivers, the principal of which is the Yukon, a river of great length. The principal mountains (among which are a number of active volcanic peaks) are Mounts Wrangell (20,000 ft.), Fairweather, and Crillon. The climate of the interior is very severe in winter, but in summer the heat is intense; on the Pacific coast it is mild but moist. Alaska produces excellent timber. Numbers of fur-bearing animals abound, such as the fur-seal, sea-otter, beaver, fox, mink, marten, &c.; and the fur trade has long been valuable. The coasts and rivers swarm with fish, and salmon and cod are caught and ex-

ported. Gold is now mined in several localities. Coal is abundant. The aboriginal inhabitants consist of Esquimaux and Indians. Alaska formerly belonged to Russia, but was made over to the United States in 1867 for a sum of 7,200,000 dollars. The seat of government is Sitka, on Baranoff Island. Pop. 1890, 30,329, of whom 4419 are whites.

Alas'sio, a seaport of North Italy, on the Gulf of Genoa, a winter resort of people from England. Pop. 5000.

Alatau (ä-lä-tou'), the name of three considerable mountain ranges of Central Asia, on the Russian and Chinese frontiers.

Alatyr (ä-lä-tir'), a town in Russia, government Simbirsk, at the confluence of the Alatyr with the Sura, with a considerable trade. Pop. 8085.

Alau'da, a genus of insessorial birds, which includes the larks. See *Lark*.

A'lava, a hilly province in the north of Spain, one of the three Basque provinces; area, 1207 sq. m.; covered by branches of the Pyrenees, the mountains being clothed with oak, chestnut, and other timber, and the valleys yielding grain, vegetables, and abundance of fruits. There are iron and copper mines, and inexhaustible salt springs. Capital, Vitoria. Pop. 93,538.

Alb (from *L. albus*, white), a clerical vestment worn by priests while officiating in the more solemn functions of divine service. It is a long robe of white linen reaching to the feet, bound round the waist by a cincture, and fitting more closely to the body than the surplice.



Alb.

Alba, the name of several towns in ancient Italy, the most celebrated of which was Alba Longa, a city of Latium, according to tradition built by Ascanius, the son of Æneas, 300 years before the foundation of Rome, at one time the most powerful city of Latium. It ultimately fell under the dominion of Rome, when the town was destroyed, it is said. In later times its site became covered with villas of wealthy Romans.

Alba (anciently *Alba Pompeia*), a town

of Northern Italy, about 30 miles S.E. of Turin, is the see of a bishop, has a cathedral, bishop's palace, church with fresco paintings by Perugino, &c. Pop. 6872.

Alba, DUKE OF. See *Alva*.

Albacete (äl-bä-thä'tā), a town in Southern Spain, capital of the province of the same name, 106 miles N.N.W. of Cartagena, with a considerable trade, both direct and transit, and manufactures of knives, daggers, &c. Pop. 17,694.—The province has an area of 6170 sq. m., and a pop. of 219,058.

Alba Longa. See *Alba*.

Alban, St., the traditionary proto-martyr of Britain, who flourished in the third century, was, it is said, converted from Paganism by a confessor whom he had saved from his persecutors, and refusing to sacrifice to the gods, was executed outside of the city of Verulamium (St. Albans) in 285 or 305.

Albani (äl-bä'nē), FRANCESCO, a famous Italian painter, born at Bologna in 1578, died in 1660. He had as teachers the Flemish painter Calvaert and the Caracci. Among the best known of his compositions are the Sleeping Venus, Diana in the Bath, Danaë Reclining, Galatea on the Sea, Europa on the Bull.

Alba'nia, an extensive region in the southwest of Turkey in Europe, stretching along the coast of the Adriatic for about 290 miles, and having a breadth varying from about 90 to about 50 miles. The boundary on the east is formed by a range of mountains, and the country is composed of at least nine ridges of hills, of which six are in Lower or Southern Albania (ancient Epirus) and the remainder in Central and Upper or Northern Albania. There are no large rivers, and in summer many of the streams are completely dry. The Drin or Drino is the largest. The most beautiful lake is that of Ochrida, 20 miles long, 8 broad at the widest part. The Lake of Scutari, in Upper Albania, is the largest. Among trees Albania has many species of oak, the poplar, hazel, plane, chestnut, cypress, and laurel. The vine flourishes, together with the orange, almond, fig, mulberry, and citron; maize, wheat, and barley are cultivated. Its fauna comprises bears, wolves, and chamois; sheep, goats, horses, asses, and mules are plentiful. The chief exports are live stock, wool, hides, timber, oil, salt-fish, cheese, and tobacco. The chief ports are Prevesa, Avlona, and Durazzo. The population, about 1,400,000, consists chiefly of Albanians or Arnauts, or, as they

call themselves, *Skipetars* (mountaineers), with a certain number of Greeks and Turks. The Albanians are distinct in race and language from the surrounding peoples. They are only half civilized, are divided into a number of clans, and bloody feuds are still common among them. They belong partly to the Greek, partly to the Roman Catholic Church, but the great majority are Mohammedans. Though their country became a province of the Turkish dominions in the



Albanian Peasantry.

fifteenth century, they still maintain a certain degree of independence, which the Porte has never found it possible to overcome.

Alba'no, a city and lake in Italy, the former about 15 miles south-east of Rome, and on the west border of the lake, amid beautiful scenery, with remarkable remains of ancient structures. Pop. 6493.—The lake, situated immediately beneath the Alban Hill, is of an oval form, 6 miles in circumference, surrounded by steep banks of volcanic tufa 300 or 400 feet high, and discharges its superfluous waters by an artificial tunnel at least 2000 years old.

Albans, Str. See *St. Albans*.

Al'bany, the original Celtic name probably at first applied to the whole of Britain, but latterly restricted to the Highlands of Scotland. It gave the title of duke formerly to a prince of the blood-royal of Scotland. The first duke was Robert Stuart (1339-1419), second son of Robert II.

and brother of Robert III. He was virtual ruler of the kingdom during the latter years of his brother's reign, and acted as regent for his nephew James I. (kept a prisoner in England) till his own death. Another nephew, David, Duke of Rothesay, is said to have been starved to death in Falkland Castle through his influence. His son Murdoch, second duke, succeeded him as regent, and was put to death by James for maladministration. The third duke was Alexander, second son of James II. and brother of James III. A large part of his life was passed in France. His son John was the fourth who bore the title. He was regent of Scotland during the minority of James V. (1515-1523). Latterly the title has belonged to members of the British royal family.

Al'bany, a city of the United States, capital of the state of New York on the west bank of the Hudson, 145 miles north of New York city, from and to which steamboats run daily. The Erie Canal and the numerous railway lines centering here from all directions greatly contribute to the growth and prosperity of the city, which carries on an extensive trade. It is a great mart for timber, and has foundries, breweries, tanneries, &c. Albany was settled by the Dutch in 1610-14, and the older houses are in the Dutch style, with the gable-ends to the streets. There is a university, an observatory, and a state library with 90,000 volumes. The principal public edifices are the capitol or state-house, the state-hall for the public offices, a state arsenal, and numerous religious edifices. Pop. in 1890, 94,923.

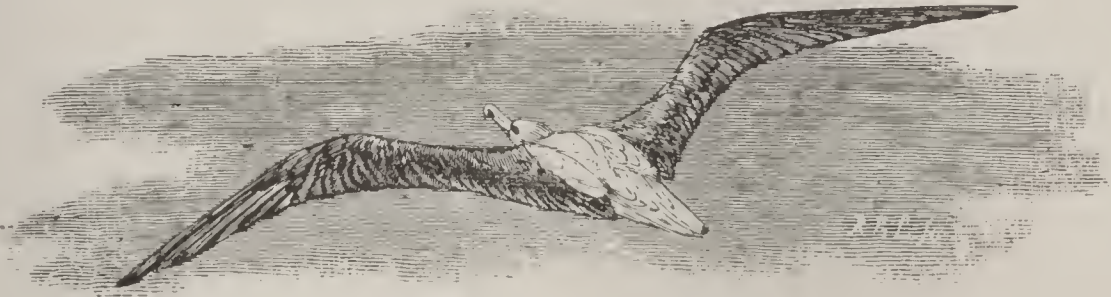
Al'bany, LOUISA MARIA CAROLINE, COUNTESS OF, a princess of the Stolberg-Gedern family, was born in 1753, and married, in 1772, the pretender, Charles Edward Stuart, after which event she bore the above title. To escape from the ill-treatment of her husband she retired, in 1780, to the house of her brother-in-law at Rome, where she met the poet Alfieri, whose mistress she became. (See *Alfieri*.) She died at Florence in 1824.

Alba'ta, a name sometimes given to German-silver.

Al'batros, a large marine swimming bird of several species, of which the wandering albatros (*Diomedea exulans*) is the best known. The bill is straight and strong, the upper mandible hooked at the point and the lower one truncated; there are three webbed toes on each foot. The upper part

of the body is of a grayish brown, and the belly white. It is the largest sea-bird known, some measuring $17\frac{1}{2}$ feet from tip to tip of their expanded wings. They abound at the Cape of Good Hope and in other parts of the southern seas, and in Behring's Straits, and have been known to accompany ships for whole days without ever resting on the waves. From this habit the bird is regarded with feelings of attach-

ment and superstitious awe by sailors, it being reckoned unlucky to kill one. Coleridge has availed himself of this feeling in his *Ancient Mariner*. The albatros is met with at great distances from the land, settling down on the waves at night to sleep. It is exceedingly voracious, whenever food is abundant gorging to such a degree as to be unable to fly or swim. It feeds on fish, carrion, fish-spawn, oceanic mollusca, and



Wandering Albatros (*Diomedea exulans*).

other small marine animals. Its voice is a harsh, disagreeable cry. Its nest is a heap of earth; its eggs are larger than those of a goose.

Albay (âl-bî'), a province, town, bay, and volcano in the south-east part of the island of Luçon, one of the Philippines. The province is mountainous but fertile; the town regularly built, with a population of 13,115; the bay capacious, secure, and almost landlocked; and the volcano, which is always in activity, forms a conspicuous landmark.

Albemarle, DUKE OF. See *Monk, George*.

Al'bendorf, a village in Prussia, province of Silesia, 50 miles s.w. of Breslau, remarkable for the pilgrimages made to its church (which has a miracle-working statue of the Virgin), chapels, statues, &c. Pop. 1800.

Alberoni, CARDINAL GIULIO (jū'li-o âl-bā-rō'nē), born in 1664 in north Italy, and educated for the church. The Duke of Parma sent him as his minister to Madrid, where he gained the affection of Philip V. He rose by cunning and intrigue to the station of prime-minister, became a cardinal, was all-powerful in Spain after the year 1715, and endeavoured to restore it to its ancient splendour. In pursuance of this object he invaded Sardinia and Sicily, and indeed entertained the idea of stirring up a general war in Europe. The alliance of France and England, however, rendered his schemes abortive, and led to his dismissal and exile in 1720. He wandered about a long time under false names, but on the

accession of Pope Innocent XIII. he was restored to all the rights and honours of a cardinal. He died at Rome in 1752.

Al'bert I., Duke of Austria, and afterwards Emperor of Germany, son of Rodolph of Hapsburg, was born in 1248. On the death of his father in 1292 he claimed the empire, but his arrogant conduct drove the electors to choose Adolphus of Nassau emperor. Adolphus, after a reign of six years, having lost the regard of all the princes of the empire, Albert was elected to succeed him. A battle ensued near Gellheim, in which Adolphus fell by the hand of his adversary, who was elected and crowned. Pope Boniface VIII., however, refused to acknowledge him as emperor, and ordered the electoral princes to renounce their allegiance to him. On the other hand, Albert formed an alliance with Philip le Bel of France, and offered so determined and successful a resistance to the papal authority that Boniface was induced to withdraw his opposition, on condition that Albert would break with his French ally. During the subsequent years of his reign the emperor was engaged in unsuccessful wars with Holland, Hungary, Bohemia, and other states. His measures to still further strengthen his authority over the Swiss Forest Cantons of Unterwalden, Schwyz, and Uri drove the inhabitants into open revolt in Jan. 1308. While on his way to crush the Swiss he was assassinated, at Aix-la-Chapelle in 1298, by his nephew,

John, Duke of Suabia, whose inheritance he had seized upon.

Albert, first Duke of Prussia, and last grand-master of the Teutonic Order, was born in 1490; died in 1568. In 1511 he was chosen by the Teutonic knights grand-master of their order. Being nephew of Sigismund, King of Poland, the knights hoped by his means to be freed from the feudal superiority of Poland, and placed under the protection of the empire. This superiority, however, Sigismund refused to surrender, and war broke out between uncle and nephew. He subsequently became reconciled to his uncle, and obtained his investiture as hereditary duke of Prussia under the Polish crown, the territorial rights of the Teutonic Order being thus set aside. The latter years of his reign were spent in organizing the government and promoting the prosperity of his duchy; he founded schools and churches, established a ducal library, and opened the University of Königsberg in 1543.

Albert, PRINCE, Albert-Francis-Augustus-Charles-Emmanuel, Prince of Saxe-Coburg-Gotha, and Prince Consort of England, second son of Ernest I., Duke of Saxe-



Albert, Prince Consort.

Coburg, was born 26th August, 1819. In 1837 he entered the University of Bonn, where he devoted himself to the studies of political and natural science, history, philosophy, &c., as well as to those of music and painting. On the 10th Feb. 1840, he married his cousin, Queen Victoria of England. An allowance of £30,000 a year was settled upon the prince, who was naturalized by act of Parliament, received the title of

Royal Highness by patent, was made a field-marshal, a Knight of the Garter, of the Bath, &c. Other honours were subsequently bestowed upon him, the chief of which was the title of Prince Consort (1857). He always carefully abstained from party politics, but never ceased to take a deep and active interest in the welfare of the people in general. His services to the cause of science and art were very important; and the great exhibition of 1851 owed much of its success to his activity, knowledge, and judgment. He presided and delivered the inaugural address at the meeting of the British Association at Aberdeen in 1859. He died of typhoid fever on December 14, 1861, after a short illness. A collection of his speeches and addresses was published in 1862. A biography of the prince by Sir Theodore Martin has been published in five volumes, London, 1875-80.

Alber'ta, one of the districts of the Northwest Territories of Canada, having Assiniboia and Saskatchewan on the east, British Columbia on the west, the United States on the south, and Athabasca on the north; area, 106,100 sq. miles; pop. 1891, 25,278. It is a fertile region with trees in the river valleys; coal is abundant. Cap. Calgary.

Albert Edward, Prince of Wales, eldest son of Queen Victoria, was born 9th Nov. 1841. He studied for a session at Edinburgh, and afterwards attended the public lectures at Oxford and Cambridge. In the summer of 1860 he paid a visit to the United States and Canada. Two years later he travelled in the East and visited Jerusalem. On March 10th, 1863, he married Princess Alexandra of Denmark, the surviving issue being two sons and three daughters. Late in 1871 he suffered from a dangerous attack of typhoid fever, and his recovery in Feb. 1872 was celebrated by a national thanksgiving festival. Between Nov. 1875 and March, 1876, the prince was engaged in a grand tour of India. He has taken a great interest in several exhibitions and institutions, as the Colonial and Indian Exhibition of 1886, the Royal College of Music, and the Imperial Institute.

Albert Nyan'za, a lake of Africa, one of the head-waters of the Nile, lying (approximately) between lat. 2° 30' and 1° 10' N., and with its north-east extremity in about lon. 28° E.; general direction from north-east to south-west, surface about 2500 feet above sea-level. It is surrounded by precipitous cliffs, and bounded on the west

and south-west by great ranges of mountains. It abounds with fish, and its shores are infested with crocodiles and hippopotami. It receives the Victoria Nile from the Victoria Nyanza, and the White Nile issues from its northern extremity.

Alber'tus Magnus, or ALBERT THE GREAT, Count of Bollstädt, a distinguished German scholar of the thirteenth century, born in 1193, studied at Padua, became a monk of the Dominican order, teaching in the schools of Hildesheim, Ratisbon, and Cologne, where Thomas Aquinas became his pupil. In 1245 he went to Paris and publicly expounded the doctrines of Aristotle, notwithstanding the prohibition of the church. He became rector of the school of Cologne in 1249; in 1254 he was made provincial of his order in Germany; and in 1260 he received from Pope Alexander IV. the appointment of Bishop of Ratisbon. In 1263 he retired to his convent at Cologne, where he composed many works, especially commentaries on Aristotle. He died in 1280. Owing to his profound knowledge he did not escape the imputation of using magical arts and trafficking with the Evil One.

Al'bi. See *Alby*.

Albigenses (al-bi-jen'sēz), a sect which spread widely in the south of France and elsewhere about the twelfth century, and which differed in doctrine and practice from the Roman Catholic Church, by which they were subjected to severe persecution. They are said to have been so named from the district of Albi, where, and about Toulouse, Narbonne, &c., they were numerous. A crusade was begun against them, and Count Raymond VI. of Toulouse for tolerating them, in 1209, the army of the cross being called together by Pope Innocent III. The war was carried on with a cruelty which reflected deep disgrace upon the Catholic Church. Béziers, the capital of Raymond's nephew Roger, was taken by storm, and 20,000 of the inhabitants, without distinction of creed, were put to the sword. Simon de Montfort, the military leader of the crusade, was equally severe towards other places in the territory of Raymond and his allies. After the death of Raymond VI., in 1222, his son, Raymond VII., was obliged, notwithstanding his readiness to do penance, to defend his inheritance against the papal legates and Louis VIII. of France. When hundreds of thousands had fallen on both sides, a peace was made in 1229, by which Raymond was obliged to cede Narbonne

with other territories to Louis IX., and make his son-in-law, a brother of Louis, his heir. The heretics were now delivered up to the proselytizing Dominicans, and to the Inquisition, and they disappeared after the middle of the thirteenth century.

Albina, Multnomah co., Oregon. Pop. 1890, 5129.

Albinos (al-bi'nōz), the name given to those persons from whose skin, hair, and eyes, in consequence of some defect in their organization, the dark colouring matter is absent. The skin of albinos, therefore, whether they belong to the white, Indian, or negro races, is of a uniform pale milky colour, their hair is white, while the iris of their eyes is pale rose colour, and the pupil intensely red, the absence of the dark pigment allowing the multitude of blood-vessels in these parts of the eye to be seen. For the same reason their eyes are not well suited to endure the bright light of day, and they see best in shade or by moonlight. The peculiarity of *albinism* or *leucopathy* is always born with the individual, and is not confined to the human race, having been observed also in horses, rabbits, rats, mice, &c., birds (white crows or black-birds are not particularly uncommon), and fishes.

Al'bion (Celtic *Albainn*, probably connected with *L. albus*, white), the earliest name by which the island of Great Britain was known, employed by Aristotle, and in poetry still used for Great Britain. The same word as *Albany*, *Albyn*.

Al'bite, or SODA-FELSPAR, a mineral, a kind of felspar, usually of a white colour, to which property it owes its name (*L. albus*, white), but occasionally bluish, grayish, greenish, or reddish white.

Al'boin, King of the Lombards, succeeded his father Audoin in 561, and reigned in Noricum and Pannonia. Narses, the general of Justinian, sought his alliance, and received his aid, in the war against Totila, king of the Ostrogoths. Alboin afterwards (in 568) undertook the conquest of Italy, where Narses, who had subjected this country to Justinian, offended by an ungrateful court, sought an avenger in Alboin, and offered him his co-operation. After a victorious career in Italy he was slain at Verona, in 573 or 574, by an assassin, instigated by his wife Rosanond, whose hatred he had incurred by sending her, in one of his fits of intoxication, a cup wrought from the skull of her father, and forcing her to drink from it.

Albrecht (äl'breht), the German form of *Albert* (which see).

Albrechtsberger (äl brehts-ber-gër), JOHANN GEORG, a German composer and writer on music; a teacher of Beethoven, Moscholes, &c. Born 1736, died 1809.

Albret, JEANNE D' (zhän däl-brä), Queen of Navarre, wife of Antoine de Bourbon and mother of Henri IV. of France, a zealous supporter of the reformed religion, which she established in her kingdom; born 1528, died (probably poisoned) 1572, shortly before the massacre of St. Bartholomew.

Albuera (äl-bu-ä'rä), a village of Spain, in Estremadura, 12 miles s.s.e. of Badajoz. A battle was fought here, May 16, 1811, between the army of Marshal Beresford (30,000) and that of Marshal Soult (25,000), when the latter was obliged to retreat to Seville, leaving Badajoz to fall into the hands of the allies.

Albu'go, an affection of the eye, consisting of a white opacity in the cornea; called also *leucoma*.

Al'bum, a name now generally given to a blank book for the reception of pieces of poetry, autographs, engravings, photographs, &c.

Albu'men, or ALBUMIN (L., from *albus*, white), a substance, or rather group of substances, so named from the Latin for the white of an egg, which is one of its most abundant known forms. It may be taken as the type of the protein compounds or the nitrogenous class of food stuffs. One variety enters largely into the composition of the animal fluids and solids, is coagulable by heat at and above 160°, and is composed of carbon, hydrogen, nitrogen, and oxygen, with a little sulphur. It abounds in the serum of the blood, the vitreous and crystalline humours of the eye, the fluid of dropsy, the substance called coagulable lymph, in nutritive matters, the juice of flesh, &c. The blood contains about 7 per cent of albumen. Another variety called vegetable albumen exists in most vegetable juices and many seeds, and has nearly the same composition and properties as egg albumen. When albumen coagulates in any fluid it readily incloses any substances that may be suspended in the fluid. Hence it is used to clarify syrupy liquors. In cookery white of eggs is employed for clarifying, but in large operations like sugar-refining the serum of blood is used. From its being coagulable by various salts, and especially by corrosive

sublimate, with which it forms an insoluble compound, white of egg is a convenient antidote in cases of poisoning by that substance. With lime it forms a cement to mend broken ware.

In botany the name albumen is given to the farinaceous matter which surrounds the embryo, the term in this case having no reference to chemical composition. It constitutes the meat of the cocoa-nut, the flour or meal of cereals, the roasted part of coffee, &c.

Albuminu'ria, a condition in which the urine contains albumen, evidencing a diseased state of the kidneys.

Albuñol (äl-bu-nyol'), a seaport of southern Spain, prov. Granada, on the Mediterranean. Pop. 8923.

Albuquerque (äl-bu-kerk'ä), AFFONSO DE, an eminent Portuguese admiral, born 1452,

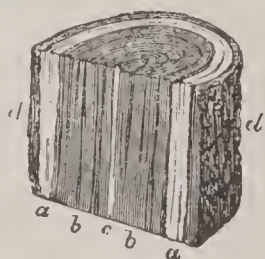


Affonso de Albuquerque.

died in 1515. Portugal having subjected to its power a large part of the western coast of Africa, and begun to extend its sway in the East Indies, Albuquerque was appointed viceroy of the Portuguese acquisitions in this quarter, and arrived in 1503 with a fleet on the coast of Malabar. His career here was extremely successful, he having extended the Portuguese power over Malabar, Ceylon, the Sunda Islands, and the Peninsula of Malacca, and made the Portuguese name respected by all the nations and princes of India.

Albuquerque, the capital of Bernalillo county, New Mexico, on the Rio Grande, 56 miles southwest of Santa Fé; has a large trade in hides and wool. Pop. in 1890, 5600.

Albur'num, the soft white substance which, in trees, is found between the liber or inner bark and the wood, and, in progress of time acquiring solidity, becomes itself the wood. A new layer of wood, or rather of alburnum, is added annually to the tree in every part just under the bark.



Alburnum.

a a, Alburnum or sap-wood. *b b*, Heart-wood. *c*, Pith. *d d*, Bark.

Albury (al'ber-i), a rising town of New South Wales on the borders of Victoria, on the right bank of the Murray, 190 miles north-east of Melbourne, in a good agricultural and wine-producing district. Pop. 5714.

Alby, or **ALBI** (äl'bē), an old town of southern France, department of Tarn, 42 miles north-east of Toulouse, on the Tarn, in an extensive plain. It has a cathedral, a Gothic structure, begun in 1282; and manufactures of linens, cottons, leather, &c. Alby is said to have given the Albigenses their name. Pop. 14,729.

Alcæ'us, one of the greatest Grecian lyric poets, was born at Mitylene, in Lesbos, and flourished there at the close of the seventh and beginning of the sixth centuries B.C.; but of his life little is known. A strong manly enthusiasm for freedom and justice pervades his lyrics, of which only a few fragments are left. He wrote in the Æolic dialect, and was the inventor of a metre that bears his name, which Horace has employed in many of his odes.

Alcala' de Guadaira (gwà-dī'rà; 'the castle of Guadaira'), a town of southern Spain, on the Guadaira, 7 miles east of Seville, chiefly celebrated for its manufacture of bread, with which it supplies a large part of the population of Seville. Pop. 7341.

Alcala' de Henares (en-ä'res), a beautiful city of Spain, 16 miles E.N.E. of Madrid, 1 mile from the Henares. It has an imposing appearance when seen from some distance, but on nearer inspection is found to be in a state of decay. There was formerly a university here, at one time attended by 10,000 students, but in 1836

it was removed with its library to Madrid. Cervantes was born here. Pop. 12,317.

Alcala' la Real (rā-äl'), a town of Spain, 18 miles south-west of Jaen, with a fine abbey and some trade. It was captured in 1340 by Alphonso XI. of Leon, from whence it derives the epithet Real ('Royal'). Pop. 15,901.

Alcalde (Spanish; äl-käl-dā), or **ALCAIDE** (Portuguese; äl-kī'dā; Arabic *alqadi*, the judge), the name of a magistrate in the Spanish and Portuguese towns, to whom the administration of justice and the regulation of the police is committed. His office nearly corresponds to that of justice of the peace. The name and the office are of Moorish origin.

Al'camo, a city in the west of Sicily, 2½ miles south of the Gulf of Castellamare, near the site of the ancient Segesta, the ruins of which, including a well-preserved Doric temple and a theatre, as well as the remains of Moorish occupation, are still to be found here. The district is celebrated for its wine, but the town is mean. Pop. 37,697.

Alcañiz (äl-kän-yēth'), a town of north-eastern Spain (Aragon). Pop. 7336.

Alcan'tara (Arabic, 'the bridge'), an ancient town and frontier fortress of Spain, on the Tagus, on a rocky acclivity, and inclosed by ancient walls. Pop. 4273. — *Order of Alcantara*, an ancient Spanish order of knighthood instituted for defence against the Moors in 1156, and made a military religious order in 1197.

Alcarraza (äl-kär-rä'thà), a vessel made of a kind of porous, unglazed pottery, used in Spain to hold drinking water, which, oozing slightly through the vessel, is kept cool by the evaporation that takes place at the surface. Similar vessels have been long used in Egypt and elsewhere.

Alcazar de San Juan (äl-kä'thâr dā sän-hwän), a town of Spain, province of Ciudad-Real (New Castile), with manufactures of soap, saltpetre, gunpowder, chocolate, &c. Pop. 8721.

Alce'do. See *Kingfisher*.

Alces'tis, in Greek mythology, wife of Admetus, king of Thessaly. Her husband was ill, and, according to an oracle, would die unless some one made a vow to meet death in his stead. This was secretly done by Alcestis, and Admetus recovered. After her decease Hercules brought her back from the infernal regions.

Al'chemy, or **ALCHYMY**, the art which in former times occupied the place of and

paved the way for the modern science of chemistry (as astrology did for astronomy), but whose aims were not scientific, being confined solely to the discovery of the means of indefinitely prolonging human life, and of transmuting the baser metals into gold and silver. Among the alchemists it was generally thought necessary to find a substance which, containing the original principle of all matter, should possess the power of dissolving all substances into their elements. This general solvent, or *menstruum universale*, which at the same time was to possess the power of removing all the seeds of disease out of the human body and renewing life, was called the *philosopher's stone*, *lapis philosophorum*, and its pretended possessors were known as *adepts*. Alchemy flourished chiefly in the middle ages, though how old might be such notions as those by which the alchemists were inspired it is difficult to say. The mythical Hermes Trismegistus of pre-Christian times was said to have left behind him many books of magical and alchemical learning, and after him alchemy received the name of the *hermetic art*. At a later period chemistry and alchemy were cultivated among the Arabians, and by them the pursuit was introduced into Europe. Many of the monks devoted themselves to alchemy, although they were latterly prohibited from studying it by the popes. But there was one even among these, John XXII., who was fond of alchemy. Raymond Lully, or Lullius, a famous alchemist of the thirteenth and fourteenth centuries, is said to have changed for King Edward I. a mass of 50,000 lbs. of quicksilver into gold, of which the first rose-nobles were coined. Among other alchemists may be mentioned Paracelsus and Basilus Valentinus. When more rational principles of chemistry and philosophy began to be diffused and to shed light on chemical phenomena, the rage for alchemy gradually decreased. It is still impossible to assert anything with certainty about the transmutation of metals. Modern chemistry, indeed, places metals in the class of elements, and denies the possibility of changing an inferior metal into gold. But hitherto chemistry has not succeeded in unfolding the principles by which metals are formed and the laws of their production, or in aiding or imitating this process of nature.

Alcibi'ades (-dēz), an Athenian of high family and of great abilities, but of no prin-

ciple, was born at Athens in B.C. 450, being the son of Cleinias, and a relative of Pericles, who also was his guardian. In youth he was remarkable for the beauty of his person, no less than for the dissoluteness of his manners. He came under the influence of Socrates, but little permanent effect was produced on his character by the precepts of the sage. He acquired great popularity by his liberality in providing for the amusements of the people, and after the death of Cleon attained a political ascendancy which left him no rival but Nicias. Thus he played an important part in the long-continued Peloponnesian war. In 415 he advocated the expedition against Sicily, and was chosen one of the leaders, but before the expedition sailed he was charged with profaning and divulging the Eleusinian mysteries, and mutilating the busts of Hermes, which were set up in public all through Athens. Rather than stand his trial he went over to Sparta, divulged the plans of the Athenians, and assisted the Spartans to defeat them. Sentence of death and confiscation was pronounced against him at Athens, and he was cursed by the ministers of religion. He soon left Sparta and took refuge with the Persian satrap Tissaphernes, ingratiating himself by his affectation of Persian manners, as he had previously done at Sparta by a similar affectation of Spartan simplicity. He now began to intrigue for his return to Athens, offering to bring Tissaphernes over to the Athenian alliance, and latterly he was recalled and his banishment cancelled. He, however, remained abroad for some years in command of the Athenian forces, gained several victories, and took Chalcedon and Byzantium. In B.C. 407 he returned to Athens, but in 406, the fleet which he commanded having suffered a severe defeat, he was deprived of his command. He once more went over to the Persians, taking refuge with the satrap Pharnabazus of Phrygia, and here he was assassinated in B.C. 404.

Alcinous (al-sin'o-us), King of the Phæacians. See ULYSSES.

Alcira (âl-thē'râ), a well-built and strongly-fortified town of Spain, province of Valencia, founded by the Carthaginians. Pop. 16,146.

Alc'man, the chief lyric poet of Sparta, a Lydian by birth, flourished between B.C. 671 and 631, and wrote (in the Doric dialect) love songs, hymns, pæans, &c., of which only fragments remain.

Alcme'na. See *Amphitryon*.

Alco, a small variety of dog, with a small head and large pendulous ears, found wild in Mexico and Peru, and also domesticated.

Alcobaça (ál-kō-bă'sà), a small town of Portugal, 50 miles north of Lisbon, celebrated for a magnificent Cistercian monastery founded in 1148 by Don Alphonso I., and containing several royal tombs.

Al'cohol, the purely spirituous or intoxicating part of all liquids that have undergone vinous fermentation, extracted by distillation—a limpid colourless liquid, of an agreeable smell and a strong pungent taste. When brandy, whisky, and other spirituous liquors, themselves distilled from cruder materials, are again distilled, highly volatile alcohol is the first product to pass off. The alcohol thus obtained contains much extraneous matter, including a proportion of water, from the first as high as 20 or 25 per cent, and increasing greatly as the process continues. Charcoal and carbonate of soda put in the brandy or other liquor, partly retain the fusel-oil and acetic acid it contains. The product thus obtained by distillation is called *rectified spirits* or *spirits of wine*, and contains from 55 to 85 per cent of alcohol, the rest being water. By distilling rectified spirits over carbonate of potassium, powdered quicklime, or chloride of calcium, the greater part of the water is retained, and nearly pure alcohol passes over. It is only however by very prolonged digestion with desiccating agents and subsequent distillation that the last traces of water can be removed. The specific gravity of alcohol varies with its purity, decreasing as the quantity of water it contains decreases. This property is a convenient test of the alcoholic strength of liquors that contain only alcohol and water; but on account of the condensation that invariably takes place on the mixture of these two liquids, it can be applied only in connection with special tables of reference, or by means of an instrument specially adapted for the purpose. (See *Alcoholometer*.) By simple distillation the specific gravity of alcohol can scarcely be reduced below .825 at 60° Fahr.; by rectification over chloride of calcium it may be reduced to .794; as it usually occurs it is about .820. Alcohol is composed of carbon, hydrogen, and oxygen, in the proportions expressed by the formula C_2H_6O . Under a barometric pressure of 29.5 inches it boils at 173° Fahr. (78° 4 C.); in the exhausted receiver of an air-pump it boils at

ordinary temperatures. Its congelation has been effected only in recent times at the low temperature of -203° F. Its very low freezing-point renders it valuable for use in thermometers for very low temperatures. Alcohol is extremely inflammable, and burns with a pale-blue flame, scarcely visible in bright daylight. It occasions no carbonaceous deposit upon substances held over it, and the products of its combustion are carbonic acid and water. The steady and uniform heat which it gives during combustion makes it a valuable material for lamps. It dissolves the vegetable acids, the volatile oils, the resins, tan, and extractive matter, and many of the soaps; the greater number of the fixed oils are taken up by it in small quantities only, but some are dissolved largely. When alcohol is submitted to distillation with certain acids a peculiar compound is formed, called *ether*. It is alcohol which gives all intoxicating liquors the property whence they are so called. Alcohol acts strongly on the nervous system, and though in small doses it is stimulating and exhilarating, in large doses it acts as a poison. In medicine it is often of great service.

The name alcohol is also applied in chemistry to a large group of compounds of carbon, hydrogen, and oxygen, whose chemical properties are analogous to that of common or ethylic alcohol.

Al'coholism, a morbid condition of the body (especially of the nervous system) brought on by the immoderate use of alcoholic liquors.

Alcoholom'eter, an instrument constructed on the principle of the hydrometer, to determine from the specific gravity of spirituous liquors the percentage of alcohol they contain, the scale marking directly the required proportion. If the liquor contain anything besides water and alcohol, previous distillation is necessary.

Alco'ran. See *Koran*.

Al'cott, LOUISA MAY, a distinguished American authoress, born in 1832. She has written a number of books chiefly intended for the young: *Little Women* (1867), *An Old-fashioned Girl* (1869), *Little Men* (1871), *Jack and Gill* (1880), &c. Died in 1888.

Al'cove, a recess in a room, usually separated from the rest of the room by columns, a balustrade, or by curtains, and often containing a bed or seats.

Alcoy', a town of Spain, in Valencia, 24 miles north by west of Alicante, in a richly

cultivated district. There is a Roman bridge over the river, and the town has a very picturesque appearance; its chief manufactures are paper and woollens. Pop. 32,497.

Alcudia, DUKE OF. See *Godoy*.

Alcuin (alk'win; in his native tongue *Ealhwine*), a learned Englishman, the confidant, instructor, and adviser of Charles the Great (Charlemagne). He was born at York in 735, and was educated and latterly had the management of the school at York. Alcuin having gone to Rome, Charlemagne became acquainted with him at Parma, invited him in 782 to his court, and made use of his services in his endeavours to civilize his subjects. To secure the benefit of his instructions Charlemagne established at his court a school, called *Schola Palatina*, or the Palace School. In the royal academy Alcuin was called *Flaccus Albinus*. Most of the schools in France were either founded or improved by him; thus he founded the school in the abbey of St. Martin of Tours, in 796, after the plan of the school in York. Alcuin left the court in 801, and retired to the abbey of St. Martin of Tours, but kept up a constant correspondence with Charles to his death in 804. He left works on theology, philosophy, rhetoric, also poems and letters, all of which have been published.

Alcyona'ria, coelenterate animals forming a great division of the class Actinozoa (see

genus *Alcyonium* in structure, and in the number and arrangement of the tentacles. See *Alcyonium*.

Alcyo'nium, a genus of coelenterate animals, one familiar species of which, dredged around the British coasts—*A. digitatum*—is named 'Dead-Men's Fingers,' or 'Cow's Paps,' from its lobed or digitate appearance. It grows attached to stones, shells, and other objects. It consists of a mass of little polyps, each polyp possessing eight little fringed tentacles disposed around a central mouth. The *Alcyonium* forms the type of the *Alcyonaria*.

Al'dan, a river of Eastern Siberia, a tributary of the Lena, 1200 miles in length. The Aldan Mountains run along parallel to it on the left for 400 miles.

Aldeb'aran, a star of the first magnitude, forming the eye of the constellation Taurus or the Bull, the brightest of the five stars known to the Greeks as the Hyades. Spectrum analysis has shown it to contain antimony, bismuth, iron, mercury, hydrogen, sodium, calcium, &c.

Al'dehyde, the oxidation product of an alcohol intermediate between it and its acid. Common aldehyde (C_2H_4O) is derived from spirit of wine by oxidation, and is a colourless, limpid, volatile, and inflammable liquid, with a peculiar ethereal odour, which is suffocating when strong; specific gravity, 0.79. It oxidizes in air, and is converted into acetic acid. It rapidly decomposes oxide of silver, depositing a brilliant film of metallic silver; hence it is used in silvering curved glass surfaces.

Alder (al'dér; *Alnus*), a genus of plants, nat. order Betulaceæ (Birch), consisting of trees and shrubs inhabiting the temperate and colder regions of the globe. Common alder (*Alnus glutinosa*) is a tree which grows in wet situations in Europe, Asia, and the United States. Its wood, light and soft and of a reddish colour, is used for a variety of purposes, and is well adapted for work which is to be kept constantly in water. The roots and knots furnish a beautifully-veined wood well suited for cabinet work. The bark is used in tanning and leather dressing, and by fishermen for staining their nets. This and the young twigs are sometimes employed in dyeing, and yield different shades of yellow and red. With the addition of copperas it yields a black dye.

Al'derman (al'dér-; Anglo-Saxon *caldor-man*, from *caldor*, older, and *man*), among the Anglo-Saxons a person of a rank equi-



Alcyonaria.

1, Sea-fan (*Gorgonia flabellum*). 2, Sea-pen (*Pennatula phosphorea*). 3, *Cornularia rugosa*.

Sea-anemone). These animals are nearly all composite, and the individual polyps have mostly eight tentacles. They include the organ-pipe corals, sea-pens, fan-corals, &c., as also the red coral of commerce. The polyps essentially resemble those of the

valent to that of an earl or count, the governor of a shire or county, and member of the *witena-gemót* or great council of the nation. Aldermen, at present, are officers associated with the mayor of a city for the administration of the municipal government in England and the United States.

Al'derney (French *Aurigny*), an island belonging to Britain off the coast of Normandy, 10 miles due west of Cape La Hogue, and 60 from the nearest point of England, the most northerly of the Channel Islands, between 3 and 4 miles long, and about 1½ broad. The coast is bold and rocky, the interior is fertile. About a third of the island is occupied by grass lands; and the Alderney cows, a small-sized but handsome breed, are famous for the richness of their milk. The climate is mild and healthy. A judge, with six 'jurats,' chosen by the people for life, and twelve 'douzaniers,' representatives of the people, form a kind of local legislature. The French language still prevails among the inhabitants, but all understand and many speak English. The *Race of Alderney* is the strait between the coast of France and this island. Pop. 2039.

Aldershot (al'dér-), a town and military station in England, the latter having given rise to the former. The 'camp' was originated in 1854 by the purchase by government of a tract of moorland known as Aldershot Heath, on the confines of Surrey, Hampshire, and Berkshire. The object was to accustom both officers and soldiers to act more readily when drawn up in brigades and divisions, their practice having been limited for the most part, since the termination of the French war, to the movements of battalions and companies. It was also deemed advisable to accustom the army to camp life, and to exercise the men in all the evolutions and movements which they might be required to perform when brought into actual contact with the enemy. The accommodation provided for the army, officers as well as men, consisted at first of wooden huts; but these have been superseded by brick barracks, erected at a cost of nearly £300,000, there being now a North and a South Camp. The men are exercised in marching, skirmishing, and similar field operations, which are carried on during the summer months with great activity; they are also instructed in the camp in culinary and other duties. The number of troops usually maintained at Aldershot is about 7000. The town is in the neighbourhood

of the barracks, immediately beyond the government ground, and in Hampshire. It contains several churches, and has schools, newspapers, literary institutes, music-halls, &c. Pop. (including military), 25,595.

Ald'helm, an Anglo-Saxon scholar and prelate, Bishop of Sherborne, born 640 (?), died 709. He was a great fosterer of learning and builder of churches, and has left Latin writings on theological subjects.

Ald'ine Editions, the name given to the works which proceeded from the press of Aldus Manutius and his family at Venice (1490–1597). (See *Manutius*.) Recommended by their value, as well as by a splendid exterior, they have gained the respect of scholars and the attention of book-collectors. Many of them are the first printed editions (*editiones principes*) of Greek and Latin classics. Others are texts of the modern Italian authors. These editions are of importance in the history of printing. Aldus had nine kinds of Greek type, and no one before him printed so much and so beautifully in this language. Of the Latin character he procured fourteen kinds of type.

Aldobrandi'ni, the name of a Florentine family, latterly of princely rank (now extinct), which produced one pope (Clement VIII.) and several cardinals, archbishops, bishops, and men of learning. — **ALDOBRANDINI MARRIAGE**, an ancient fresco painting belonging probably to the time of Augustus, discovered in 1606, and acquired by Cardinal Aldobrandini, nephew of Clement VIII., now in the Vatican. It represents a marriage scene in which ten persons are portrayed, and is considered one of the most precious relics of ancient art.

Al'dred, or **EALDRED**, Anglo-Saxon prelate, Bishop of Worcester and Archbishop of York, born 1000 (?), died 1069. He improved the discipline of the church and built several ecclesiastical edifices. On the death of Edward the Confessor he is said to have crowned Harold. Having submitted to the Conqueror, whose esteem he enjoyed and whose power he made subservient to the views of the church, he also crowned him as well as Matilda.

Ald'rich, **HENRY**, Dean of Christchurch, Oxford; born in 1647, died in 1710; distinguished as a writer on logic, as an architect, and as a musician. His *Compendium of Logic* was a text-book till quite recently. He adapted many of the works of the older musicians, such as Palestrina and Carissimi,

to the liturgy of the Church of England, and composed many services and anthems, some of which are still heard in English cathedrals.

Ald'rich, THOMAS BAILEY, an American poet and writer of prose tales, mostly humorous, born in 1836, was a short time in a mercantile house, but soon adopted literature as a profession; and was for a time editor of the *Atlantic Monthly*. He has written in verse: *The Bells*; *Ballad of Baby Bell*; *Pampinea* and other Poems; *Cloth of Gold* and other Poems; *Flower and Thorn*; in prose: *Daisy's Necklace*; *Story of a Bad Boy*; *Marjory Daw*; *Prudence Palfrey*, &c.

Aldridge, Ira, the 'African Roscius,' born near Baltimore, Md., in 1810, died in 1867. He made a successful début in the Royal theatre, London, in 'Othello.' On the continent he took high rank in Shakespeare's tragedies; had presents of crosses and medals from emperors and kings; a member of many of the great academies.

Aldrovan'di, ULYSSES, a distinguished Italian naturalist, born 1522, died 1605. He was professor at Bologna, and established botanical gardens and museums of natural history there; wrote a work on natural history in thirteen vols.

Ale and Beer, well known and much used fermented liquors. See *Brewing*.

Aleardi (à-lā-ār'dē), ALEARDO, a distinguished Italian lyrical and political poet and patriot, born 1812, died 1878; latterly member of the Italian board of higher education and senator.

Ale-conner, formerly an officer in England appointed to assay ale and beer, and to take care that they were good and wholesome, and sold at a proper price. The duty of the ale-conners of London was to inspect the measures used in public-houses, to prevent frauds in selling liquors. Four of these were chosen annually by the liverymen, in common hall, on Midsummer's Day.

Ale-cost. See *Costmary*.

Alec'to, in Greek mythology, one of the Furies (which see).

Aleman (à-le-mān'), MATEO, a Spanish novelist, born about the middle of the sixteenth century, died in 1610. His fame rests on his *Life and Adventures of the Rogue Guzman de Alfarache*, one of the best of the *picaresque* or rogue novels, which give such a lively picture of the shady classes of society in Spain during the sixteenth and seventeenth centuries. The hero becomes in succession stable-boy,

beggar, porter, thief, man of fashion, soldier, valet, merchant, student, robber, galley-slave, and lastly his own biographer.

Aleman'ni, or ALAMANNI, a confederacy of several German tribes which, at the commencement of the third century after Christ, lived near the Roman territory, and came then and subsequently into conflict with the imperial troops. Caracalla first fought with them in 213, but did not conquer them; Severus was likewise unsuccessful. About 250 they began to cross the Rhine westwards, and in 255 they overran Gaul along with the Franks. In 259 a body of them was defeated in Italy at Milan, and in the following year they were driven out of Gaul by Postumus. But the Alemanni did not desist from their incursions, notwithstanding the numerous defeats they suffered at the hands of the Roman troops. In the fourth century they crossed the Rhine and ravaged Gaul, but were severely defeated by the Emperor Julian and driven back. Subsequently they occupied a considerable territory on both sides of the Rhine; but at last Clovis broke their power in 496 and deprived them of a large portion of their possessions. Part of their territory was latterly formed into a duchy called Alemannia or Swabia, this name being derived from Suevi or Swabians, the name which they gave themselves. It is from the Alemanni that the French have derived their names for Germans and Germany in general, namely, *Allemands* and *Allemagne*, though strictly speaking only the modern Swabians and northern Swiss are the proper descendants of that ancient race.

Alembert (à-lān-bār), JEAN LE ROND D', a French mathematician and philosopher, born in Paris in 1717, and died there in 1783. He was the illegitimate son of Madame de Tencin, and was exposed at the Church of St. Jean le Rond (hence his name) soon after birth. He was brought up by the wife of a poor glazier, and with her he lived for more than forty years. His parents never publicly acknowledged him, but his father settled upon him an income of 1200 livres. He showed much quickness in learning, entered the College Mazarin at the age of twelve, and studied mathematics with enthusiasm and success. Having left college he studied law and became an advocate, but did not cease to occupy himself with mathematics. A pamphlet on the motion of solid bodies in a fluid, and another

on the integral calculus, which he laid before the Academy of Sciences in 1739 and 1740, showed him in so favourable a light that the Academy received him in 1741 into the number of its members. He soon after published his famous work on dynamics, *Traité de Dynamique* (1743); and that on fluids, *Traité des Fluides*. He also took a part in the investigations which completed the discoveries of Newton respecting the motion of the heavenly bodies, and published at intervals various important astro-

nomical dissertations, as well as on other subjects. He also took part, with Diderot and others, in the celebrated *Encyclopédie*, for which he wrote the *Discours Préliminaire*, as well as many philosophical and almost all the mathematical articles. He received an invitation from the Russian empress Catherine II. to go to St. Petersburg, and Frederick the Great invited him to Berlin, but in vain. From Frederick, however, he accepted a pension. There was an intimate friendship between him and Voltaire.



Aleppo.

Alem'bic, a simple apparatus sometimes used by chemists for distillation. The *cucurbit*, or body, contains the substance to be distilled, and is usually somewhat like a bottle, bulging below and narrowing towards the top; the *head*, of a globular form, with a flat under-ring, fits on to the neck of the cucurbit, condenses the vapour from the heated liquid, and receives the distilled liquid on the ring inclosing the neck of the lower vessel, and thus causes it to find egress by a discharging pipe into the third section, called the *receiver*. See *Distillation*.

Alemtejo (â-lân-tā'zhō; 'beyond the Tagus'), the largest province of Portugal, and the most southern except Algarve; area, 10,255 square miles; pop. 367,169. The capital is Evora.

Alençon (â-lân-sōn), a town of France, capital of department Orne, and formerly of the Duchy of Alençon, on the right bank of the Sarthe, 105 miles west by south of Paris; well built; has a fine Gothic church (fifteenth century), and interesting remains of the old castle of the dukes d'Alençon.

Alençon was long famed for its point-lace, called 'point d'Alençon,' a branch of industry now much fallen off; it has cotton and flax spinning and weaving, &c.; fine rock-crystal, yielding the so-called 'diamants d'Alençon,' is found in the neighbouring granite quarries. Pop. 17,237.—**ALENÇON**, originally a county, later a dukedom, became united with the crown in 1221, and was given by Louis XI. as an appanage to his fifth son, with whom the branch of the Alençon-Valois commenced. The first duke of the name lost his life at the battle of Agincourt in 1415; another, called Charles IV., married the celebrated Margaret of Valois, sister of Francis I. He commanded the left wing of the French army at the battle of Pavia, where, instead of supporting the king at a critical moment, he fled at the head of his troops, the consequence of which was the loss of the battle and the capture of the king.

Alentejo. See *Alemtejo*.

Alep'po, a city of Asiatic Turkey, in North Syria, on the river Koik, in a fine

plain 60 miles south-east of Alexandretta, which is its port, and 195 miles N.N.E. of Damascus. It has a circumference of about 7 miles, and consists of the old town and numerous suburbs. Its appearance at a distance is striking, and the houses are well built of stone. On a hill stands the citadel, and at its foot the governor's palace. Previous to 1822 Aleppo contained about 100 mosques, but in that year an earthquake laid the greater part of them in ruins, and destroyed nearly the whole city. The aqueduct built by the Romans is the oldest monument of the town. Among the chief attractions of Aleppo are its gardens, in which the pistachio-nut is extensively cultivated. Formerly the city was the centre of a great import and export trade, and its manufactures, consisting of shawls, cottons, silks, gold and silver lace, &c., were very valuable, but the earthquake already mentioned and various other causes have combined to greatly lessen its prosperity. It has still a trade, however, in wool, cotton, silk, wax, skins, soap, tobacco, &c., and imports a certain quantity of European manufactures.—Aleppo was a place of considerable importance in very remote times. By the Greeks and Romans it was called *Beræa*. It was conquered by the Arabs in 638, and its original name *Chalybon* was then turned into *Haleb*, whence the Italian form *Aleppo*. Its population, 200,000 at the beginning of the century, is now estimated at over 100,000, of whom perhaps 25,000 are Christians. The language generally spoken is Arabic.

Alesh'ki, a town of Southern Russia, gov. Taurida. Pop. 8915.

Ale'sia, a town and fortress of ancient Gaul, at which in B.C. 52 Julius Cæsar inflicted a crushing defeat on the Gauls under Vercingetorix. It is now represented by the village of Alise, department Côte d'Or, near which Napoleon III. erected a colossal statue of Vercingetorix in 1865.

Alessan'dria, a town and fortress in North Italy, capital of the province of the same name, in a marshy country, near the junction of the Bormida and the Tanaro. It was built in 1168 by the Cremonese and Milanese, and was named in honour of Pope Alexander III., who made it a bishop's see. It has a cathedral, important manufactures of linen, woollen, and silk goods, and an active trade. It ranks as one of the first fortresses of Europe, the fortifications including a surrounding wall and bastions,

and a strong citadel on the opposite side of the Tanaro, connected by a bridge with the town. Pop. 30,761.

Ales'si, GALEAZZO, a distinguished Italian architect, born at Perugia, 1512, died there in 1572. Many palaces, villas, and churches were erected after his designs.

Aletsch'-glacier, the greatest glacier in Switzerland, canton Vaud, a prolongation of the immense mass of glaciers connected with the Jungfrau, the Aletschhorn (14,000 ft.), and other peaks; about 15 miles long.

Aleurom'eter, an instrument for indicating the bread-making qualities of wheaten flour. The indications depend upon the expansion of the gluten contained in a given quantity of flour when freed of its starch by pulverization and repeated washings with water.

Aleu'tian Islands, a chain of about eighty small islands belonging to the United States, separating the Sea of Kamtchatka from the northern part of the Pacific Ocean, and extending nearly 1000 miles from east to west between lon. 172° E. and 163° W.; total area, 6391 square miles; pop. 1220. They are of volcanic formation, and in a number of them there are volcanoes still in activity. Their general appearance is dismal and barren, yet grassy valleys capable of supporting cattle throughout the year are met with, and potatoes, turnips, and other vegetables are successfully cultivated. They afford also an abundance of valuable fur and of fish. The natives belong to the same stock with those of Kamtchatka.

Ale'wife (corruption of the Indian name), the *Alōsa tyrannus*, a fish of the same genus as the shad, growing to the length of 12 inches, and taken in great quantities in the mouths of the rivers of New England, New Brunswick, and Nova Scotia, being salted and exported.

Alexander, surnamed *the Great*, was the son of Philip of Macedon and his queen Olympias, and was born at Pella, B.C. 356. In youth he had Aristotle as instructor, and he early displayed uncommon abilities. The victory of Chæroneia in 338, which brought Greece entirely under Macedonia, was mainly decided by his efforts. Philip having been assassinated, B.C. 336, Alexander, not yet twenty years of age, ascended the throne. His father had been preparing an expedition against the Persians and Alexander determined to carry it out; but before doing so he had to chastise the barbarian tribes on the frontiers of Macedon

as well as quell a rising in Greece, in which he took and destroyed Thebes, put 6000 of the inhabitants to the sword, and carried 30,000 into captivity. Leaving Antipater to govern in his stead in Europe, and being confirmed as commander-in-chief of the Greek forces in the general assembly of the Greeks, he crossed over the Hellespont into Asia, in the spring of 334, with 30,000 foot and 5000 horse.

His first encounter with the Persian forces (assisted by Greek mercenaries) was at the small river Granicus, where he gained a complete victory.



Coin of Alexander the Great.

Most of the cities of Asia Minor now opened their gates to the victor, and Alexander restored democracy in all the Greek cities. In passing through Gordium he cut the Gordian knot, on which it was believed the fate of Asia depended, and then conquered Lycia, Ionia, Caria, Pamphylia, and Capadocia. A sickness, caused by bathing in the Cydnus (B.C. 333), checked his course; but scarcely was he restored to health when he continued his onward course, and this same year defeated the Persian emperor Darius and his army of 500,000 or 600,000 men, (including 50,000 Greek mercenaries) near Issus (inner angle of the Gulf of Alexandretta). Darius fled towards the interior of his dominions, leaving his family and treasures to fall into the hands of the conqueror. Alexander did not pursue Darius, but proceeded southwards, and secured all the towns along the Mediterranean Sea, though he did not get possession of Tyre (taken 332 B.C.) without a siege of seven months. Palestine and Egypt now fell before him, and in the latter he founded Alexandria, which became one of the first cities of ancient times. Hence he went through the desert of Libya, to consult the oracle of Zeus Ammon, and it was said that the god recognized him as his son. On his return Alexander marched against Darius, who had collected an immense army in Assyria, and rejected the proposals of his rival for peace. A battle was fought at Gaugamela, about 50 miles from Arbela, B.C. 331, and notwithstanding the immense

numerical superiority of his enemy, Alexander (who had but 40,000 men and 7000 horse) gained a complete victory. Babylon and Susa opened their gates to the conqueror, who marched towards Persepolis, the capital of Persia, and entered it in triumph. He now seems for a time to have lost his self-command. He gave himself up to arrogance and dissipation, and is said in a fit of intoxication to have set fire to the palace of Persepolis, one of the wonders of the world. Rousing himself up, however, he set out in pursuit of Darius, who, having lost his throne, was kept prisoner by Bessus, satrap of Bactriana, who, when he saw himself closely pursued, caused Darius to be assassinated (B.C. 330). Continuing his progress he subdued Bessus, and advanced to the Jaxartes, the extreme eastern limit of the empire, but did not fully subdue the whole of this region till 328, some fortresses holding out with great tenacity. In one of these he took prisoner the beautiful Roxana, daughter of Oxyartes, a nobleman of Sogdiana, and having fallen in love with her he married her. Meantime disaffection had once or twice manifested itself among his Macedonian followers and had been cruelly punished; and he had also, to his lasting remorse, killed his faithful friend Cleitus in a fit of drunken rage. Alexander now formed the idea of conquering India, then scarcely known even by name. He passed the Indus (B.C. 326), marched towards the Hydaspes (Jhelum), at the passage of which he conquered a king named Porus in a bloody battle, and advanced victoriously through the north-west of India, and intended to proceed as far as the Ganges, when the murmurs of his army compelled him to return. On the Hydaspes he built a fleet, in which he sent a part of his army down the river, while the rest proceeded along the banks. By the Hydaspes he reached the Acesines (Chenab), and thus the Indus, down which he sailed to the sea. Nearchus, his admiral, sailed hence to the Persian Gulf, while Alexander directed his march by land to Babylon, losing a great part of his troops in the desert through which he had to pass. In Susa he married Statira, the eldest daughter of Darius, and rewarded those of his Macedonians who had married Persian women, because it was his intention to unite the two nations as closely as possible. At Opis, on the Tigris, a mutiny arose among his Macedonians (in 324), who thought he showed too much favour to the

Asiatics; by firmness and policy he succeeded in quelling this rising, and sent home 10,000 veterans with rich rewards. Soon after, his favourite, Hephæstion, died at Ecbatana, and Alexander's grief was unbounded. The favourite was royally buried at Babylon, and here Alexander was engaged in extensive plans for the future, when he became suddenly sick, after a banquet, and died in a few days (323 B.C.), in his thirty-third year, after a reign of twelve years and eight months. His body was after a time conveyed to Egypt with great splendour by his general Ptolemy. He left behind him an immense empire, which was divided among his chief generals, and became the scene of continual wars. The reign of Alexander constitutes an important period in the history of humanity. His career was not merely a series of empty conquests, but was attended with the most important results. The language, and much of the civilization of Greece, followed in his track; large additions were made to the sciences of geography, natural history, &c.; a road was opened to India; and the products of the farthest east were introduced into Europe. Greek kingdoms, under his generals and their successors, continued to exist in Asia for centuries.

Alexander, the name of eight popes, the earliest of whom, Alexander I., is said to have reigned from 109 to 119. The most famous (or infamous) is **Alexander VI.** (Borgia), who was born at Valencia, in Spain, in 1431, and died in 1503. When he was only twenty-five years of age his uncle, Pope Calixtus III., made him a cardinal, and shortly afterwards appointed him to the dignified and lucrative office of vice-chancellor. By bribery he prepared his way to the papal throne, which he attained in 1492, after the death of Innocent VIII. Both the authority and revenues of the popes being at this time much impaired, he set himself to reduce the power of the Italian princes, and seize upon their possessions for the benefit of his own family. To effect this end he is said not to have scrupled to use the vilest means, including poison and assassination. His policy, foreign as well as domestic, was faithless and base, and his private life was stained by sensuality. He understood how to extract immense sums of money from all Christian countries under various pretexts. He sold indulgences, and set aside, in favour of himself, the wills of several cardinals. His excesses

roused against him the powerful eloquence of Savonarola, who, by pen and pulpit, urged his deposition, but had to meet his death at the stake in 1498. Not long after his election Alexander had the honour of deciding the dispute between the kings of Portugal and Castile concerning their respective claims to the foreign countries recently discovered. His son, Cesare Borgia, and his daughter Lucrezia, are equally notorious with himself.

Alexander, the name of three Scottish kings. **Alexander I.**, a son of Malcolm Canmore and Margaret of England, succeeded his brother Edgar in 1107, and governed with great ability till his death in 1124. He was a great benefactor of the church, and a firm vindicator of the national independence.—**Alexander II.** was born in 1198, and succeeded his father William the Lion in 1214. He was a wise and energetic prince, and Scotland prospered greatly under him, though disturbed by the Norsemen, by the restlessness of some of the Celtic chiefs, and by the attempts of Henry III. of England to make Alexander do homage to him. Alexander married Henry's sister, Joan, in 1221, who lived till 1238. In 1244 war with England almost broke out, but was fortunately averted. Alexander died in 1248 at Kerrera, an island opposite Oban, when on an expedition in which he hoped to wrest the Hebrides from Norway. He was succeeded by his son, **Alexander III.**, a boy of eight, who in 1251 married Margaret, eldest daughter of Henry III. of England. Like his father he was eager to bring the Hebrides under his sway, and this he was enabled to accomplish in a few years after the defeat of the Norse King Haco at Largs, in 1263. The mainland and islands of Scotland were now under one sovereign, though Orkney and Shetland still belonged to Norway. Alexander was strenuous in asserting the independence both of the Scottish kingdom and the Scottish church against England. He died in 1285 by the falling of his horse while he was riding in the dark between Burntisland and Kinghorn. He left as his heiress Margaret, the Maiden of Norway, daughter of Eric of Norway, and of Alexander's daughter, Margaret. Under him Scotland enjoyed greater prosperity than for generations afterwards.

Alexander I., Emperor of Russia, son of Paul I. and Maria, daughter of Prince Eugene of Würtemberg, was born in 1777,

and died in 1825. On the assassination of his father, in 1801, Alexander ascended the throne, and one of his first acts was to conclude peace with Britain, against which his predecessor had declared war. In 1803 he offered his services as mediator between England and France, and two years later a convention was entered into between Russia, England, Austria, and Sweden for the purpose of resisting the encroachments of France on the territories of independent states. He was present at the battle of Austerlitz (1805), when the combined armies of Russia and Austria were defeated by Napoleon. In the succeeding campaign the Russians were again beaten at Eylau (8th February, 1807) and Friedland (14th June), the result of which was an interview, between Alexander and Napoleon, and the treaty at Tilsit. The Russian emperor now for a time identified himself with the Napoleonic schemes, and soon obtained possession of Finland and an extended territory on the Danube. The French alliance, however, he found to be too oppressive, and his having separated himself from Napoleon led to the disastrous French invasion of 1812. In 1813 he published a manifesto which served as the basis of the coalition of the other European powers against France, which was followed by the capture of Paris (in 1814), the abdication of Napoleon and the restoration of the Bourbons, and the utter overthrow of Napoleon the following year. After Waterloo, Alexander, accompanied by the Emperor of Austria and the King of Prussia, made his second entrance into Paris, where they concluded the treaty known as the Holy Alliance. The remaining part of his reign was chiefly taken up in measures of internal reform, including the gradual abolition of serfdom, and the promotion of education, agriculture, commerce, and manufactures, as well as literature and the fine arts.

Alexander II., Emperor of Russia, was born April 29, 1818, and succeeded his father Nicholas in 1855, before the end of the Crimean war. After peace was concluded the new emperor set about effecting reforms in the empire, the greatest of all being the emancipation of the serfs in 1861, a measure which gave freedom, on certain conditions, to 22,000,000 of human beings who were previously in a state little removed from that of slavery. Under him, too, representative assemblies in the provinces were introduced, and he also did much to improve

education, and to reorganize the judicial system. During his reign the Russian dominions in Central Asia were extended, a piece of territory south of the Caucasus, formerly belonging to Turkey, was acquired, and a part of Bessarabia, belonging since the Crimean war to Turkey in Europe, but previously to Russia, was restored to the latter power. The latter additions resulted from the Russo-Turkish war of 1877-78. He was killed by an explosive missile flung at him (by a Nihilist it is supposed) in a street in St. Petersburg, 13th March, 1881. He was succeeded by his second son, **ALEXANDER III.**, who, after a reign filled with perpetual fear of assassination, died a natural death on Nov. 1, 1894.

Alexander of Hales. See **HALES** (**ALEXANDER DE**).

Alexander Nevskoi, a Russian hero and saint, son of the Grand-duke Jaroslav, born in 1219, died in 1263. He fought valiantly against assaults of the Mongols, the Danes, Swedes, and knights of the Teutonic order. He gained the name of *Nevskoi* in 1240, for a splendid victory, on the Neva, over the Swedes. The gratitude of his countrymen commemorated the hero in popular songs, and raised him to the dignity of a saint. Peter the Great built a splendid monastery at St. Petersburg in his honour, and in memory of him established the order of Alexander Nevskoi.

Alexander Seve'rus, a Roman emperor, born in 205, died 235 A.D. He was raised to the imperial dignity in 222 A.D. by the prætorian guards, after they had put his cousin the emperor Heliogabalus to death. He governed ably both in peace and war; and also occupied himself in poetry, philosophy, and literature. In 232 he defeated the Persians under Artaxerxes, who wished to drive the Romans from Asia. When on an expedition into Gaul to repress an incursion of the Germans, he was murdered with his mother in an insurrection of his troops, headed by the brutal Maximin, who succeeded him as emperor.

Alexanders (*Smyrnum olusatrum*), an umbelliferous biennial plant, a native of Britain, formerly cultivated for its leaf-stalks, which, having a pleasant aromatic flavour, were blanched and used instead of celery—a vegetable that has taken its place.

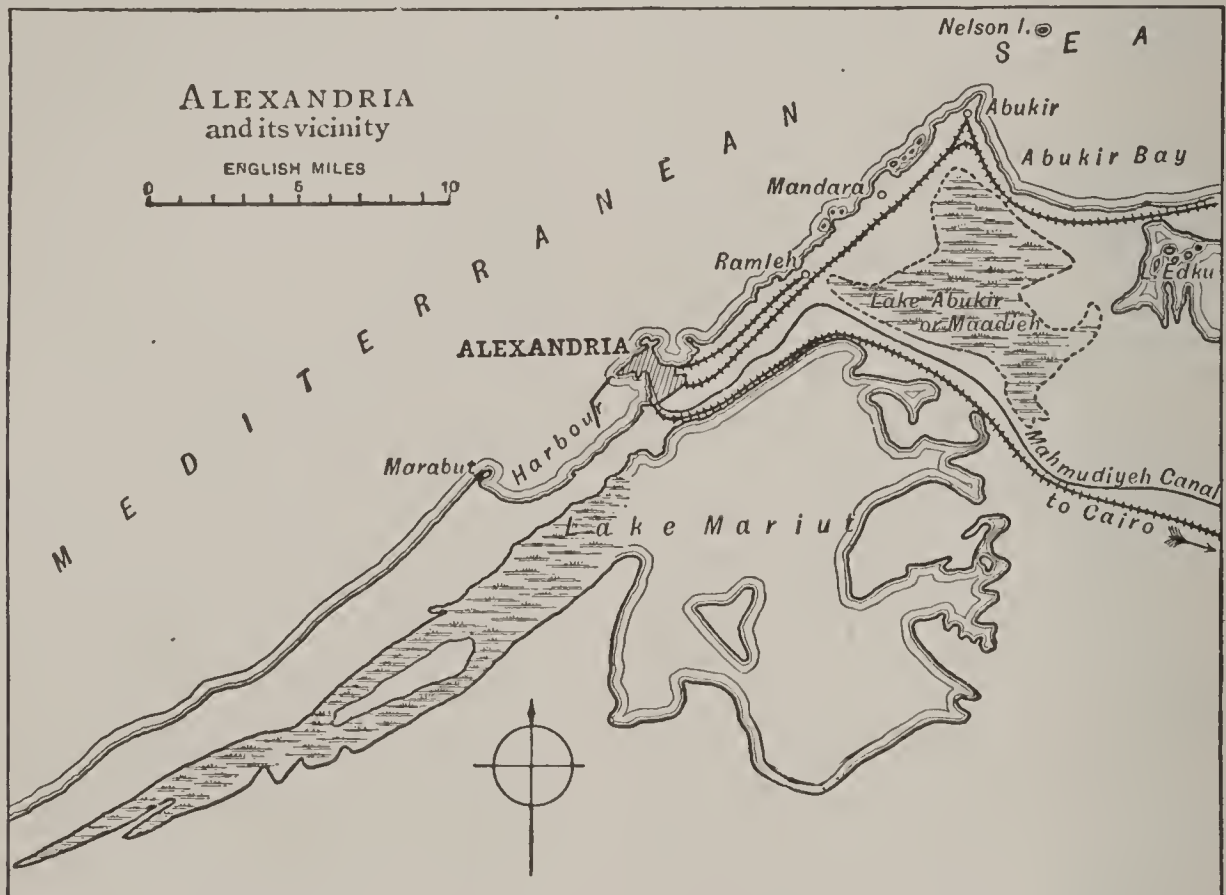
Alexandret'ta, or **ISKANDEROON** (ancient *Alexandria ad Issum*), a small seaport in Asia Minor, on the Gulf of Iskanderoon, the port of Aleppo and Northern Syria. Named

ALEXANDRIA.

after Alexander the Great, at whose command it was founded in memory of the battle of Issus. Pop. 1500.

Alexan'dria, an ancient city and seaport in Egypt, at the north-west angle of the Nile delta, on a ridge of land between the sea and Lake Mareotis. Ancient Alexandria was founded by, and named in honour of, Alexander the Great, in B.C. 332, and was long a great and splendid city, the

centre of commerce between the east and west, as well as of Greek learning and civilization, with a population at one time of perhaps 1,000,000. It was especially celebrated for its great library, and also for its famous lighthouse, one of the wonders of the world, standing upon the little island of Pharos, which was connected with the city by a mole. Under Roman rule it was the second city of the empire, and when



Constantinople became the capital of the East it still remained the chief centre of trade; but it received a blow from which it never recovered when captured by Amru, general of Caliph Omar in 641, after a siege of fourteen months. Its ruin was finally completed by the discovery of the passage to India by the Cape of Good Hope, which opened up a new route for the Asiatic trade. See *Alexandrian Library*, *Alexandrian School*. —Modern Alexandria stands partly on what was formerly the island of Pharos, partly on the peninsula which now connects it with the mainland and has been formed by the accumulation of soil, and partly on the mainland. The streets in the Turkish quarter are narrow, dirty, and irregular; in the foreign quarter they are regular and wide, and it is here where the finest houses

are situated, and where are the principal shops and hotels, banks, offices of companies, &c.; this part of the city being also supplied with gas, and with water brought by the Mahmudieh Canal from the western branch of the Nile. Alexandria is connected by railway with Cairo, Rosetta, and Suez. A little to the south of the city are the catacombs, which now serve as a quarry. Another relic of antiquity is Pompey's Pillar, 98 ft. 9 in. high. Alexandria has two ports, on the east and west respectively of the isthmus of the Pharos peninsula, the latter having a breakwater over 3000 yards in length, with fine quays and suitable railway and other accommodation. The trade of Alexandria is large and varied, the exports being cotton, beans, pease, rice, wheat, &c.; the imports chiefly manufactured goods. At

the beginning of the century Alexandria was an insignificant place of 5000 or 6000 inhabitants. The origin of its more recent career of prosperity it owes to Mohammed Ali. In 1882 the insurrection of Arabi Pasha and the massacre of Europeans led to the intervention of the British, and the bombardment of the forts by the British fleet in July. When the British entered the city they found the finest parts of it sacked and in flames; it is now handsomely rebuilt. Pop. 325,000.

Alexandria, a town and port of the United States, in Virginia, on the right bank of the Potomac (which is of sufficient depth for large vessels), 7 miles south of Washington, with straight and spacious streets; carries on a considerable trade, chiefly in flour. Pop. in 1890, 14,339.

Alexandria, a town of Scotland, in Dumbartonshire, on the Leven, 4 miles north of Dumbarton, with extensive cotton printing and bleaching works. Pop. 6173.

Alexandria, a town of Southern Russia, government of Cherson, on a tributary of the Dnieper. Pop. 10,521.

Alexandrian Library, the largest and most famous of all the ancient collections of books, founded by Ptolemy Soter (died 283 B.C.), king of Egypt, and greatly enlarged by succeeding Ptolemies. At its most flourishing period it is said to have numbered 700,000 volumes, accommodated in two different buildings, one of them being the Serapeion, or temple of Jupiter Serapis. The other collection was burned during Julius Caesar's siege of the city, but the Serapcion library existed to the time of the Emperor Theodosius the Great, when, at the general destruction of the heathen temples, the splendid temple of Jupiter Serapis was gutted (A.D. 391) by a fanatical crowd of Christians, and its literary treasures destroyed or scattered. A library was again accumulated, but was burned by the Arabs when they captured the city under the caliph Omar in 641. Amru, the captain of the caliph's army, would have been willing to spare the library, but Omar is said to have disposed of the matter in the famous words: 'If these writings of the Greeks agree with the Koran they are useless, and need not be preserved; if they disagree they are pernicious, and ought to be destroyed.'

Alexandrian School or AGE, the school or period of Greek literature and learning that existed at Alexandria in Egypt during the three hundred years that the rule of

the Ptolemies lasted (323–30 B.C.), and continued under the Roman supremacy. Ptolemy Soter founded the famous library of Alexandria (see above) and his son, Philadelphus, established a kind of academy of sciences and arts. Many scholars and men of genius were thus attracted to Alexandria, and a period of literary activity set in, which made Alexandria for long the focus and centre of Greek culture and intellectual effort. It must be admitted, however, that originality was not a characteristic of the Alexandrian age, which was stronger in criticism, grammar, and science than in pure literature. Among the grammarians and critics were Zenodotus, Eratosthenes, Aristophanes, Aristarchus, and Zoilus, proverbial as a captious critic. Their merit is to have collected, edited, and preserved the existing monuments of Greek literature. To the poets belong Apollonius, Lycophron, Aratus, Nicander, Euphorion, Callimachus, Theocritus, Philetas, &c. Among those who pursued mathematics, physics, and astronomy, was Euclid, the father of scientific geometry; Archimedes, great in physics and mechanics; Apollonius of Perga, whose work on conic sections still exists; Nicomachus, the first scientific arithmetician; and (under the Romans) the astronomer and geographer Ptolemy. Alexandria also was distinguished in philosophical speculation, and it was here that the New Platonic school was established at the close of the second century after Christ by Ammonius of Alexandria (about 193 A.D.), whose disciples were Plotinus and Origen. Being for the most part orientals, formed by the study of Greek learning, the writings of the New Platonists are strikingly characterized—for example, those of Ammonius Saccas, Plotinus, Iamblicus, Porphyrius—by a mixture of Asiatic and European elements. The principal Gnostic systems also had their origin in Alexandria.

Alexandrian Version, or CODEX ALEXANDRINUS, a manuscript in the British Museum, of great importance in Biblical criticism, written on parchment with uncial letters, and belonging probably to the latter half of the sixth century. It contains the whole Greek Bible (the Old Testament being according to the Septuagint), together with the letters of Bishop Clement of Rome, but it wants parts of Matthew, John, and Second Corinthians. The Patriarch of Constantinople, who in 1628 sent this manuscript as a present to Charles I., said he had received it from Egypt (whence its name).

Alexandrine, in prosody, the name given, from an old French poem on Alexander the Great, to a species of verse, which consists of six iambic feet, or twelve syllables, the pause being, in correct Alexandrines, always on the sixth syllable; for example, the second of the following verses:—

A needless Alexandrine ends the song,
Which, like a wounded snake, drags its slow
length along.

In English Drayton's *Polyolbion* is written in this measure, and the concluding line of the Spenserian stanza is an Alexandrine. The French in their epics and dramas are confined to this verse, which for this reason is called by them the *heroic*.

Alexandro'pol, a Russian town and fortress in the Transcaucasian government of Erivan, near the highway from Erivan to Kars; can accommodate 10,000 military, and has silk manufactories. Pop. 17,272.

Alexan'drov, a town of Russia, government of Vladimír, with a famous convent, in the church of which are interred two sisters of Peter the Great; manufactures of steel and cotton goods. In the neighbourhood is an imperial stud. Pop. 7179.

Alex'isbad, a bathing place of Germany, Anhalt, in the Harz Mountains, with two mineral springs strongly impregnated with iron.

Alex'is Michai'lovitch (son of Michael), second Russian czar of the line of Romanof (the present dynasty), born in 1629, succeeded his father Michael Feodorovitch in 1645, and died in 1676. He did much for the internal administration and for the enlargement of the empire; reconquered Little Russia from Poland, and carried his authority to the extreme east of Siberia. He was father of Peter the Great.

Alexis Petro'vitch, eldest son of Peter the Great, was born in Moscow, 1690, and died in 1718. He opposed the innovations introduced by his father, who on this account disinherited him by a ukase in 1718, and when he discovered that Alexis was paving the way to succeed to the crown he had his son tried and condemned to death. This affected the latter so much that he died in a few days, leaving a son, afterwards the emperor Peter II.

Alex'ius Comne'nus, Byzantine Emperor, was born in 1048, and died in 1118. He was a nephew of Isaac the first emperor of the Comneni, and attained the throne in 1081, at a time when the empire was men-

aced from various sides, especially by the Turks and the Normans. From these dangers, as well as from later (caused by the first Crusade, the Normans, and the Turks), he managed to extricate himself by policy or warlike measures, and maintained his position till the age of seventy, during a reign of thirty-seven years.

Al'fa, a name for esparto grass or a variety of it, largely obtained from Algeria. See *Esparto*.

Alfal'fa, a prolific forage plant similar to Lucern, largely grown in California, and in parts of Spanish America. Heavy crops are gathered three or four times a season.

Alfara'bi, an eminent Arabian scholar of the tenth century; died at Damascus in 950; wrote on the Aristotelian philosophy, and compiled a kind of encyclopedia.

Al'fenid, an alloy of nickel plated with silver, used for spoons, forks, candlesticks, tea services, &c.

Alfieri (ál-fē-ā'rē), VITTORIO, COUNT, Italian poet, was born at Asti in 1749, and died in 1803. After extensive European travels he began to write, and his first play, *Cleopatra* (1775), being received with general applause he determined to devote all his efforts to attaining a position among writers of dramatic poetry. At Florence he became intimate with the Countess of Albany, wife of Prince Charles Edward Stuart, and on the death of the prince she lived with him as his mistress. This connection he believed to have served to stimulate and elevate his poetic powers. He died at Florence and was buried in the church of Santa Croce, between Macchiavelli and Michael Angelo, where a beautiful monument by Canova covers his remains. He wrote twenty-one tragedies and six comedies. His tragedies are full of lofty and patriotic sentiments, but the language is stiff and without poetic grace, and the plots poor. Nevertheless he is considered the first tragic writer of Italy, and has served as a model for his successors. Alfieri composed also an epic, lyrics, satires, and poetical translations from the ancient classics. He left an interesting autobiography.

Alfon'so. See *Alphonso*.

Al'ford, HENRY, D.D., Dean of Canterbury, an English poet, scholar, and miscellaneous writer, was born in London in 1810. After attending various schools he entered Trinity College, Cambridge, in 1827, graduated B.A. in 1832, was elected fellow in 1834, and next year became vicar of

Wymeswold, Leicestershire. In 1842 he was appointed examiner in logic and moral philosophy to the University of London, and held the appointment till 1857. He early began the great work of his life, his edition of the Greek Testament with commentary, which occupied him for twenty years, the first volume being published in 1849, the fourth and last in 1861. In 1853 he was translated to Quebec Chapel, London, and in 1857 he was appointed Dean of Canterbury. He died in 1871. Among other things he wrote Chapters on the Poets of Ancient Greece, Sermons, Psalms and Hymns, Homilies on the Acts of the Apostles, Letters from Abroad, Poetical Works, Plea for the Queen's English.

Alfred (or **ÆLFRED**) the Great, King of England, one of the most illustrious rulers on record, was born at Wantage, in Berkshire, A.D. 849, his father being Ethelwolf, son of Egbert, king of the West Saxons. He succeeded his brother Ethelred in 872, at a time when the Danes, or Northmen, had extended their conquests widely over the country, and they had completely overrun the kingdom of the West Saxons by 878. Alfred was obliged to flee in disguise, and stayed for some time with one of his own neat-herds. At length he gathered a small force, and having fortified himself on the Isle of Athelney, formed by the confluence of the rivers Parret and Tone, amid the marshes of Somerset, he was able to make frequent sallies against the enemy. It was during his abode here that he went, if the story is true, disguised as a harper into the camp of King Guthrum (or Guthorm), and, having ascertained that the Danes felt themselves secure, hastened back to his troops, led them against the enemy, and gained such a decided victory that fourteen days afterwards the Danes begged for peace. This battle took place in May, 878, near Edington, in Wiltshire. Alfred allowed the Danes who were already in the country to remain, on condition that they gave hostages, took a solemn oath to quit Wessex, and embraced Christianity. Their king, Guthrum, was baptized, with thirty of his followers, and ever afterward remained faithful to Alfred. They received that portion of the east of England now occupied by the counties of Norfolk, Suffolk, and Cambridge, as a place of residence. The few years of tranquillity (886-893) which followed were employed by Alfred in rebuilding the towns that had suffered most during the war, particularly

London; in training his people in arms and no less in agriculture; in improving the navy; in systematizing the laws and internal administration; and in literary labours and the advancement of learning. He caused many manuscripts to be translated from Latin, and himself translated several works into Anglo-Saxon, such as the Psalms, Æsop's Fables, Boethius on the Consolation of Philosophy, the History of Orosius, Bede's Ecclesiastical History, &c. He also drew up several original works in Anglo-Saxon. These peaceful labours were interrupted, about 894, by an invasion of the Northmen, who, after a struggle of three years, were finally driven out. Alfred died in 901. He had married, in 868, Alswith or Ealhswith, the daughter of a Mercian nobleman, and left two sons: Edward, who succeeded him, and Ethelwerd, who died in 922. Alfred presents us with one of the most perfect examples of the able and patriotic monarch united with the virtuous man.

Algæ (al'jē), a nat. order of cryptogamic or thallogamous plants, found for the most part in the sea and fresh water, and comprising sea-weeds, &c. The higher forms have stems bearing leaf-like expansions, and they are often attached to the rocks by roots, which, however, do not derive nutriment from the rocks. A stem, however, is most frequently absent. The plants are nourished through their whole surface by the medium in which they live. They vary in size from the microscopic diatoms to forms whose stems resemble those of forest trees, and whose fronds rival the leaves of the palm. They are entirely composed of cellular tissue, and many are edible and nutritious, as carrageen or Irish-moss, dulse, &c. Kelp, iodine, and bromine are products of various species. The Algæ are also valuable as manure. They are often divided into five orders:—Diatomaceæ, Confervaceæ, Fucaceæ, Ceramiceæ, and Characeæ.

Algar'di, **ALESSANDRO**, one of the chief Italian sculptors of the seventeenth century; born 1602, died 1654. He lived and worked chiefly at Rome; executed the tomb of Leo XI. in St. Peter's, and a marble relief with life-size figures over the altar of St. Leo there.

Algaro'ba-bean. See *Carob-tree*.

Algarobill'a, the seed-pods of one or two South American trees (genus *Prosopis*), valuable as containing much tannin.

Al'garot, a violently purgative and eme-

tic white powder, precipitated from chloride of antimony in water; formerly used in medicine.

Algarot'ti, FRANCESCO, COUNT, born in 1712, died in 1764, an Italian writer on science, the fine arts, &c. He lived for some years in France and for a long time in Germany, Frederick the Great of Prussia having made him chamberlain and count. He wrote *Newtonianism for the Ladies*; *Essays on the Fine Arts*; poems, letters, &c.

Algarve (âl-gâr'vā), a maritime province of Portugal occupying the southern portion of the kingdom; mountainous but with some fertile tracts. Area, 2099 square miles; pop. 200,000.

Algau (âl'gou), a name for the southwestern portion of Bavaria and the adjacent parts of Würtemberg and Tirol, intersected by the *Algau Alps*. The *Algau* breed of cattle is one of the best in Germany.

Algazzali (âl-gâz-â'lē), ABU HAMED MOHAMMED, an Arabian philosopher, Persian by birth; born 1058, died 1111. He was a most prolific author; an opponent of the prevailing Aristotelian philosophy of the day, and wrote against it the *Destruction of the Philosophers*, answered by Averroes in his *Destruction of the Destruction*.

Al'gebra, a kind of generalized arithmetic, in which numbers or quantities and operations, often also the results of operations, are represented by symbols. Thus the expression $xy + cz + dy^2$ denotes that a number represented by x is to be multiplied by a number represented by y , a number c multiplied by a number z , a number d by a number y multiplied by itself (or squared), and the sum taken of these three products. So the *equation* (as it is called) $x^2 - 7x + 12 = 0$ expresses the fact that if a certain number x is multiplied by itself, and this result made less by seven times the number and greater by twelve, the result is 0. In this case x must either be 3 or 4 to produce the given result; but such an equation (or formula) as $(a + b)(a - b) = a^2 - b^2$ is always true whatever values may be assigned to a and b . Algebra is an invaluable instrument in intricate calculations of all kinds, and enables operations to be performed and results obtained that by arithmetic would be impossible, and its scope is still being extended.

The beginnings of algebraic method are to be found in Diophantus, a Greek of the fourth century of our era, but it was the *Arabians* that introduced algebra to Europe,

and from them it received its name. The first Arabian treatise on algebra was published in the reign of the great Kaliph Al Mamun (813-833) by Mohammed Ben Musa. In 1202 Leonardo Fibonacci of Pisa, who had travelled and studied in the East, published a work treating of algebra as then understood in the Arabian school. From this time to the discovery of printing considerable attention was given to algebra, and the work of Ben Musa and another Arabian treatise, called the *Rule of Algebra*, were translated into Italian. The first printed work treating on algebra (also on arithmetic, &c.) appeared at Venice in 1494, the author being a monk called Luca Pacioli da Bergamo. Rapid progress now began to be made, and among the names of those to whom advances are to be attributed are Tartaglia and Cardan. About the middle of the sixteenth century the German Stifel introduced the signs $+$, $-$, $\sqrt{}$, and *Reorde* the sign $=$. *Reorde* wrote the first English work on algebra. François Vieta, a French mathematician (1540-1603), first adopted the method which has led to so great an extension of modern algebra, by being the first who used general symbols for known quantities as well as for unknown. It was he also who first made the application of algebra to geometry. Albert Girard extended the theory of equations by the supposition of imaginary quantities. The Englishman Harriot, early in the seventeenth century, discovered negative roots, and established the equality between the number of roots and the units in the degree of the equation. He also invented the signs $<$, $>$, and Oughtthred that of \times . Descartes, though not the first to apply algebra to geometry, has, by the extent and importance of his applications, commonly acquired the credit of being so. The same discoveries have also been attributed to him as to Harriot, and their respective claims have caused much controversy. He obtained by means of algebra the definition and description of curves. Since his time algebra has been applied so widely in geometry and higher mathematics that we need only mention the names of Fermat, Wallis, Newton, Leibnitz, De Moivre, MacLaurin, Taylor, Euler, D'Alembert, Lagrange, Laplace, Fourier, Poisson, Gauss, Horner, De Morgan, Sylvester, Cayley. Boole, Jevons, and others have applied the algebraic method not only to formal logic but to political economy.

Algeciras (âl-he-thē'rās), a seaport of Spain, on the west side of the Bay of Gibraltar, a well-built town carrying on a brisk coasting trade. It was the first conquest of the Arabs in Spain (711), and was held by them till 1344, when it was taken by Alphonso XI. of Castile after a siege of twenty months. Near Algeciras, in July, 1801, the English admiral Saumarez defeated the combined French and Spanish fleets, after having failed in an attack a few days before. Pop. 14,230.

Alge'ria, a French colony in North Africa, having on the north the Mediterranean, on the east Tunis, on the west Marocco, and on the south (where the boundary is ill-defined) the Desert of Sahara; area, 122,878 sq. miles, or including the Algerian Sahara 257,000. The country is divided into three departments — Algiers, Oran, and Constantine. The coast-line is about 550 miles in length, steep and rocky, and though the indentations are numerous the harbours are much exposed to the north wind. The country is traversed by the Atlas Mountains, two chains of which—the Great Atlas, bordering on the Sahara, and the Little, or Maritime Atlas, between it and the sea—run parallel to the coast, the former attaining a height of 7000 feet. The intervals are filled with lower ranges, and numerous transverse ranges connect the principal ones and run from them to the coast, forming elevated table-lands and inclosed valleys. The rivers are numerous, but many of them are mere torrents rising in the mountains near the coast. The Shelif is much the largest. Some of the rivers are largely used for irrigation, and artesian wells have been sunk in some places for the same purpose. There are, both on the coast and in the interior, extensive salt lakes or marshes (*Shotts*), which dry up to a great extent in summer. The country bordering on the coast, called the *Tell*, is generally hilly, with fertile valleys; in some places a flat and fertile plain extends between the hills and the sea. In the east there are *Shotts* that sink below the sea-level, and into these it has been proposed to introduce the waters of the Mediterranean. The climate varies considerably according to elevation and local peculiarities. There are three seasons: winter from November to February, spring from March to June, and summer from July to October. The summer is very hot and dry. In many parts of the coast the temperature is moderate and the

climate so healthy that Algeria is now a winter resort for invalids.

The chief products of cultivation are wheat, barley, and oats, tobacco, cotton, wine, silk, and dates. Early vegetables, especially potatoes and pease, are exported to France and England. A fibre called *alfa*, a variety of esparto, which grows wild on the high plateaux, is exported in large quantities. Cork is also exported. There are valuable forests, in which grow various sorts of pines and oaks, ash, cedar, myrtle, pistachio-nut, mastic, carob, &c. The Australian *Eucalyptus globulus* (a gum-tree) has been successfully introduced. Agriculture often suffers much from the ravages of locusts. Among wild animals are the lion, panther, hyæna, and jackal; the domestic quadrupeds include the horse, the mule, cattle, sheep, and pigs (introduced by the French). Algeria possesses valuable minerals, including iron, copper, lead, sulphur, zinc, antimony, marble (white and red), and lithographic stone.

The trade of Algeria has greatly increased under French rule, France, Spain, and England being the countries with which it is principally carried on, and three-fourths of the whole being with France. The exports (besides those mentioned above) are olive-oil, raw hides, wood, wool, tobacco, oranges, &c.; the imports, manufactured goods, wines, spirits, coffee, &c. The manufacturing industries are unimportant, and include morocco leather, carpets, muslins, and silks. French money, weights, and measures are generally used. The chief towns are Algiers, Oran, Constantine, Bona, and Tlemcen. There are about 1300 miles of railways opened; there is also a considerable network of telegraph lines.

The two principal native races inhabiting Algeria are Arabs and Berbers. The former are mostly nomads, dwelling in tents and wandering from place to place, though a large number of them are settled in the *Tell*, where they carry on agriculture and have formed numerous villages. The Berbers, here called Kabyles, are the original inhabitants of the territory and still form a considerable part of the population. They speak the Berber language, but use Arabic characters in writing. The Jews form a small but influential part of the population. Various other races also exist. Except the Jews all the natives races are Mohammedans. There are now a considerable number of French and other colonists, pro-

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vision being made for granting them concessions of land on certain conditions. There are over 260,000 colonists of French origin in Algeria, and over 200,000 colonists natives of other European countries (chiefly Spaniards and Italians). Algeria is governed by a governor-general, who is assisted by a council appointed by the French government. The settled portion of the country, in the three departments of Algiers, Constantine, and Oran, is treated much as if it were a part of France, and each department sends two deputies and one senator to the French chambers. The rest of the territory is under military rule. The colony costs France a considerable sum every year. Pop. (1891) of civil ter. 3,636,967; of mil. ter. 487,765; total, 4,124,732.

The country now called Algeria was known to the Romans as Numidia. It flourished greatly under their rule, and early received the Christian religion. It was conquered by the Vandals in 430-431 A.D., and recovered by Belisarius for the Byzantine Empire in 533-534. About the middle of the seventh century it was overrun by the Saracens. The town of Algiers was founded about 935 by Yussef Ibn Zeiri, and the country was subsequently ruled by his successors and the dynasties of the Almoravides and Almohades. After the overthrow of the latter, about 1269, it broke up into a number of small independent territories. The Moors and Jews who were driven out of Spain by Ferdinand and Isabella at the end of the fifteenth century settled in large numbers in Algeria, and revenged themselves on their persecutors by the practice of piracy. On this account various expeditions were made by Spain against Algeria, and by 1510 the greater part of the country was made tributary. A few years later the Algerians invited to their assistance the Turkish pirate Horush (or Haruj) Barbarossa, who made himself Sultan of Algiers in 1516, but was not long in being taken by the Spaniards and beheaded. His brother and successor put Algiers under the protection of Turkey (about 1520), and organized the system of piracy which was long the terror of European commerce, and was never wholly suppressed till the French occupation. Henceforth the country belonged to the Turkish empire, though from 1710 the connection was little more than nominal. The depredations of the Algerian pirates were a continual source of irritation to the Christian

powers, who sent a long series of expeditions against them. For instance in 1815 a United States fleet defeated an Algerian one and forced the dey to agree to a peace in which he recognized the American flag as inviolable. In 1816 Lord Exmouth with an English fleet bombarded Algiers, and exacted a treaty by which all the Christian slaves were at once released, and the dey undertook for the future to treat all his prisoners of war as the European law of nations demanded. But the piratical practices of the Algerians were soon renewed.

At last the French determined on more vigorous measures, and in 1830 sent a force of over 40,000 men against the country. Algiers was speedily occupied, the dey retired, and the country was without a government, but resistance was organized by Abd-el-Kader, an Arab chief whom the emergency had raised up. He began his warlike career of fifteen years by an attack on Oran in 1832, and after an obstinate struggle the French, in February, 1834, consented to a peace, acknowledging him as ruling over all the Arab tribes west of the Shelif by the title of Emir of Maskara. War was soon again renewed with varying fortune, and in 1837, in order to have their hands free in attacking Constantine, the French made peace with Abd-el-Kader, leaving to him the whole of Western Algeria except some coast towns. Constantine was now taken, and the subjugation of the province of Constantine followed. Meanwhile Abd-el-Kader was preparing for another conflict, and in November, 1838, he suddenly broke into French territory with a strong force, and for a time the supremacy of the French was endangered. Matters took a more favourable turn for them when General Bugeaud was appointed governor-general in February, 1841. In the autumn of 1841 Saida, the last fortress of Abd-el-Kader, fell into his hands, after which the only region that held out against the French was that bordering on Morocco. Early in the following year this also was conquered, and Abd-el-Kader found himself compelled to seek refuge in the adjoining empire. From Morocco Abd-el-Kader twice made a descent upon Algeria, on the second occasion defeating the French in two battles; and in 1844 he even succeeded in raising an army in Morocco to withstand the French. Bugeaud, however, crossed the frontier, and inflicted a severe defeat on this army, while a French fleet bom-

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barded the towns on the coast. The Emperor of Marocco was at length compelled to agree to a treaty, in which he not only promised to refuse Abd-el-Kader his assistance, but even engaged to lend his assistance against him. Reduced to extremities Abd-el-Kader surrendered on 27th December, 1847, and was at first taken to France a prisoner, but was afterwards released on his promise not to return to Algeria. The country was yet far from subdued, and the numerous risings that successively took place

rendered Algeria a school for French generals, such as Pélissier, Canrobert, St. Arnaud, and Macmahon. In 1864 Macmahon succeeded Pélissier as governor-general. About this time the emperor Napoleon III., who had visited the colony, introduced considerable modifications into the government. Fresh disturbances broke out in the south nearly every year till 1871, when, during the Franco-German war, a great effort was made to throw off the French yoke. It was, however, completely suppressed, and



Principal Mosque, Algiers.

in order to remove what was believed to be one principal cause of the frequent insurrections a civil government was established instead of the military government in the northern parts of the colony. The southern parts, inhabited by nomadic tribes, are still subject to military rule.

Algesi'ras. See **ALGECIRAS**.

Alghero, or **ALGHERI** (âl-gā'rō, âl-gā'rē), a fortified town and seaport on the north-west coast of the island of Sardinia, 15 miles south-west of Sassari; the seat of a bishop, with a handsome cathedral. Pop. 8092.

Algiers (al'jērz), a city and seaport on the Mediterranean, capital of Algeria, on the Bay of Algiers, partly on the slope of a hill facing the sea. The old town, which is the higher, is oriental in appearance, with narrow, crooked streets, and houses that are strong, prison-like edifices. The modern French town, which occupies the lower slope and spreads along the shore, is handsomely built, with broad streets and elegant squares. It contains the government buildings, the

central military and civil establishments, the barracks, the residence of the governor-general and the officials of the general and provincial government, the superior courts of justice, the archbishop's palace and the cathedral, an English church and library, the great commercial establishments, &c. A fine boulevard built on a series of arches, and bordered on one side by handsome buildings, runs along the sea front of the town overlooking the bay, harbour, and shipping. Forty feet below are the quay and railway-station, reached by inclined roads leading from the centre of the boulevard. The harbour is good and capacious, and it and the city are defended by a strong series of fortifications. There is a large shipping trade carried on. The climate of Algiers, though extremely variable, makes it a very desirable winter residence for invalids and others from colder regions. Though warm, it is bracing and tonic, and not of a relaxing character. There is a considerable rainfall (average 29 in.), but the dry air and absorb-

ent soil prevent it from being disagreeable. The winter months resemble a bright, sunny English autumn, while the heat of summer is not so intense as that of Egypt. The sirocco or desert wind is troublesome, however, during summer, but in the winter it is merely a pleasant, warm, dry breeze. Hail-storms are not unfrequent, but frost and snow in Algiers are so rare as to be almost unknown. Pop. 74,792.

Algin, a viscous, gummy substance obtained from certain sea-weeds, more especially those of the genus *Laminaria*. It can be utilized for all purposes where starch or gum is now required; may be used in cookery for soups and jellies; and in an insoluble form it can be cut, turned, and polished, like horn or vulcanite.

Algo'a Bay, a bay on the south coast of Cape Colony, 425 miles east from the Cape of Good Hope, the only place of shelter on this coast for vessels during the prevailing north-west gales. The usual anchorage is off Port Elizabeth, on its west coast, now a place of large and increasing trade.

Algol', a star in the constellation Perseus (head of Medusa), remarkable as a variable star, changing in brightness from the second to the fifth magnitude.

Algo'ma, a district of Canada, on the north side of Lake Superior, forming the north-west portion of Ontario, rich in silver, copper, iron, &c.

Algon'kins, a family of North American Indians, formerly spread over a great extent of territory, and still forming a large proportion of the Indians of Canada. They consisted of four groups, namely—(1) the eastern group, comprising the Massachusetts, Narragansets, Mohicans, Delawares, and other tribes; (2) the north-eastern group, consisting of the Abenakis, &c.; (3) the western group, made up of the Shawnees, Miamis, Illinois, &c.; and (4) the north-western group, including the Chippewas or Ojibbewas, the largest of all the tribes.

Alguacil, **ALGUAZIL** (âl-gwà-thêl'), in

Spain, an officer whose business it is to execute the decrees of a judge; a sort of constable.

Algum. See *Almug*.

Alha'gi. See *Camel's-thorn*.

Alhama (â-lâ'mâ; that is, 'the bath'), a town of Southern Spain, province of Granada, on the Motril, 25 miles south-west of Granada, celebrated for its warm medicinal (sulphur) baths and drinking waters. It formed a Moorish fortress, the recovery of which in 1482 by the Spaniards led to the entire conquest of Granada. It was thrown into ruins by an earthquake in Dec. 1884.

Pop. 8000. —

There is also an **ALHAMA** in the province of Murcia, with a warm mineral spring. Pop. 6000.

Alham'bra (Arabic, *Kelât-al-hamrah*, 'the red castle'), a famous group of buildings in Spain, forming the citadel of Granada when that city was one of the principal seats of the em-



Alhambra—Moorish Ornament.

pire of the Moors in Spain, situated on a height, surrounded by a wall flanked by many towers, and having a circuit of 2½ miles. Within the circuit of the walls are two churches, a number of mean houses, and some straggling gardens, besides the palace of Charles V and the celebrated Moorish palace which is often distinctively spoken of as the Alhambra. This building, to which the celebrity of the site is entirely due, was the royal palace of the kings of Granada. The greater part of the present building belongs to the first half of the 14th century. It consists mainly of buildings surrounding two oblong courts, the one called the Court of the Fishpond (or of the Myrtles), 138 by 74 feet, lying north and south; the other, called the Court of the Lions, from a fountain ornamented with twelve lions in marble, 115 by 66 feet, lying east and west, described as being, with the apartments that surround it, 'the gem of Arabian art in Spain, its most beautiful and most perfect example.' Its design is elaborate, exhibiting a profusion of exquisite detail gorgeous in colouring, but the smallness of its size deprives it

of the element of majesty. The peristyle or portico on each side is supported by 128 pillars of white marble, 11 feet high, sometimes placed singly and sometimes in groups. Two pavilions project into the court at each end, the domed roof of one having been lately restored. Some of the finest chambers of the Alhambra open into this court, and near the entrance a museum of Moorish remains has been formed. The prevalence of stucco or plaster ornamentation is one of the features of the Alhambra, which becomes especially remarkable in the beautiful honey-comb stalactital pendentives which the ceilings exhibit. Arabesques and geometrical designs with interwoven inscriptions are present in the richest profusion. See Owen Jones's work on the Alhambra (two vols. London, 1842-45).

Alhaurin (âl-ou-rên'), a town of Southern Spain, province of Malaga, with sulphureous baths. Pop. 7000.

Ali (â'lē), cousin and son-in-law of Mohammed, the first of his converts, and the bravest and most faithful of his adherents, born A.D. 602. He married Fatima, the daughter of the prophet, but after the death of Mohammed (632) his claims to the caliphate were set aside in favour successively of Abu-Bekr, Omar, and Othman. On the assassination of Othman, in A.D. 656, he became caliph, and after a series of struggles with his opponents, including Ayesha, widow of Mohammed, finally lost his life by assassination at Kufa in 661. A Mohammedan schism arose after his death, and has produced two sects. One sect, called the Shiites, put Ali on a level with Mohammed, and do not acknowledge the three caliphs who preceded Ali. They are regarded as heretics by the other sect, called Sunnites. The Maxims and Hymns of Ali are yet extant. See *Caliph*.

Ali, Pasha of Yanina, generally called *Ali Pasha*, a bold and able, but ferocious and unscrupulous Albanian, born in 1741, son of an Albanian chief, who was deprived of his territories by rapacious neighbours. Ali by his enterprise and success, and by his entire want of scruple, got possession of more than his father had lost, and made himself master of a large part of Albania, including Yanina, which the Porte sanctioned his holding, with the title of pasha. He now as a ruler displayed excellent qualities, putting an end to brigandage and anarchy, making roads, and encouraging commerce. He still farther extended his

sway by subduing the brave Suliotes of Epirus, whom he conquered in 1803, after a three years' war. He had long been aiming at independent sovereignty, and had intrigued alternately with England, France, and Russia. Latterly he was almost independent of the Porte, which at length determined to put an end to his power; and in 1820 Sultan Mahmoud pronounced his deposition. Ali resisted several pashas who were sent to carry out this decision, only surrendering at last in 1822, on receiving assurances that his life and property should be granted him. Faith was not kept with him, however; he was killed, and his head was cut off and conveyed to Constantinople, while his treasures were seized by the Porte.

Al'ias (Latin, 'on another occasion,' 'otherwise'), a word often used in judicial proceedings in connection with the different names that persons have assumed, most likely for prudential reasons at different times, and in order to conceal identity, as Joseph Smith *alias* Thomas Jones.

Alias'ka, the south-western peninsula of Alaska Territory, N. America.

Alibert (â-lē-bâr), JEAN LOUIS BARON, a distinguished French physician, born 1766, died 1837, wrote many valuable works on medical subjects.

Ali Bey, a ruler of Egypt, born in the Caucasus in 1728, was taken to Cairo and sold as a slave, but having entered the force of the Mamelukes, and attained the first dignity among them, he succeeded in making himself virtual governor of Egypt. He now refused the customary tribute to the Porte, and coined money in his own name. In 1769 he took advantage of a war in which the Porte was then engaged with Russia, to endeavour to add Syria and Palestine to his Egyptian dominion, and in this he had almost succeeded, when the defection of his own adopted son Mohammed Bey drove him from Egypt. Joining his ally Sheikh Daher in Syria, he still pursued his plans of conquest with remarkable success, till in 1773 he was induced to make the attempt to recover Egypt with insufficient means. In a battle near Cairo his army was completely defeated and he himself taken prisoner, dying a few days afterwards either of his wounds or by poison.

Al'ibi (L., 'elsewhere'), a defence in criminal procedure, by which the accused endeavours to prove that when the alleged crime was committed he was present in a different place.

Alicante (ā-lē-kān'tā), a fortified town and Mediterranean seaport in Spain, capital of the province of the same name, picturesquely situated partly on the slope of a hill, partly on the plain at the foot, about 80 miles south by west of Valencia. The lower town has wide and well-built streets; the upper town is old and irregularly built. The principal manufactures are cotton, linen, and cigars, one cigar manufactory employing above 3000 women. The chief export is wine, which largely goes to England. Alicante is an ancient town. In 718 it was taken by the Moors, from whom it was wrested about 1240. In modern times it has been several times besieged and bombarded, as by the French in 1709 and in 1812, and by the people of Cartagena during the commotions of 1873. Pop. 39,638. —The province is very fruitful and well cultivated, producing wine, silk, fruits, &c. The wine is of a dark colour (hence called *vino tinto*, deep-coloured wine), and is heavy and sweet. Area, 2098 sq. miles. Pop. 1887, 432,335.

Alicata, or **LICATA** (ā-lē-kā'tā, lē-kā'tā), the most important commercial town on the S. coast of Sicily, at the mouth of the Salso, 24 miles E.S.E. of Girgenti, with a considerable trade in sulphur, grain, wine, oil, nuts, almonds, and soda. It occupies the site of the town which the Tyrant Phintias of Acragas erected and named after himself, when Gela was destroyed in 280. Pop. 15,966.

Alice Maud Mary, **PRINCESS**, second daughter of Queen Victoria, Duchess of Saxony, and Grand-duchess of Hesse-Darmstadt, born 1843, died 1878. In 1862 she married Frederick William Louis of Hesse, nephew of the grand-duke, whom he succeeded in 1877. She showed exemplary devotion to her father Prince Albert during his fatal illness and to the Prince of Wales during his attack of fever in 1871. During the Franco-German war she did noble nursing service to both French and Germans. She died from diphtheria caught while nursing her husband and children.

Alien, in relation to any country, a person born out of the jurisdiction of the country, and not having acquired the full rights of a citizen of it. The position of aliens depends upon the laws of the respective countries, but generally speaking aliens owe a local allegiance, and are bound equally with natives to obey all general rules for the preservation of order which do not re-

late specially to citizens. Aliens have been often treated with great harshness by the laws of some states. Thus in France there long existed what was known as the *droit d'aubaine*, a law which claimed for the benefit of the state the effects of deceased foreigners leaving no heirs who were natives. Aliens have been repeatedly the objects of legislation in Britain, and the tendency at the present day is to communicate some of the rights of citizenship to aliens, and to widen the definition of subjects. According to the act of 1870 that now regulates the matter, real and personal property of every description may be acquired, held, and disposed of by an alien, in the same manner in all respects as by a natural-born British subject. No other right or privilege (such as the right to hold any office or any municipal, parliamentary, or other franchise) is by this act conferred on an alien except such as are expressly given in respect of property. Previously aliens could hold only personal property; they were incompetent to hold landed property, except under certain conditions of residence or business occupancy for a term of years not exceeding twenty-one. The children of aliens born in Britain are natural-born subjects. Formerly the only mode of naturalization was by act of parliament; but now an alien resident in the United Kingdom for not less than five years, or who has been in the service of the crown for not less than five years, and intends to reside in the kingdom, or to serve the British crown, may apply to the secretary of state for a certificate of naturalization, and on giving evidence of particulars may obtain it, being thereby entitled to all the political and other rights of a natural-born British subject. It used to be a principle in English law, that a natural-born subject could not divest himself of his allegiance by becoming naturalized in a foreign state; but it is now laid down that a British subject who has voluntarily become naturalized in a foreign state thereby ceases to be a British subject. Any British subject who has become an alien may apply for a certificate of readmission to British nationality, on the same terms as those provided for aliens in general. In the United States the position of aliens as regards acquisition and holding of real property differs somewhat in the different states, though in recent times the disabilities of aliens have been removed in most of them. Personal property they can take.

hold, and dispose of like native citizens. Individual states have no jurisdiction on the subject of naturalization, though they may pass laws admitting aliens to any privilege short of citizenship. A naturalized citizen is not eligible to election as president or vice-president of the United States, and cannot serve as senator until after nine years' citizenship, nor as a member of the house of representatives until after seven years' citizenship. Five years' residence in the United States and one year's permanent residence in the particular state where the application is made are necessary for the attainment of citizenship.

Alien and Sedition Laws. French interference in the domestic politics of the U. States caused the passage by congress, June 25, 1798, of the Alien law, giving the president power to order aliens, whom he should adjudge dangerous, out of the country, and providing for the fine and imprisonment of those who refused to go. The Sedition law, passed July 14, 1798, to remain in force till March 3, 1801, imposed fine and imprisonment on conspirators to resist government measures, and on libellers and scandalizers of the government, congress, or the president.

Aligarh (*a-le-gar'*), a fort and town in India, in the North-west Provinces, on the East Indian railway, 84 miles south-east of Delhi. The town, properly called Koel or Coel, is distant about 2 miles from the fort. Pop. 61,730. The district has an area of 1954 square miles, and a pop. of 1,021,187.

Align'ment (*a-lin'ment*), a military term, signifying the act of adjusting to a straight line or in regular straight lines, or the state of being so adjusted.

Al'iment, food, a term which includes everything, solid or liquid, serving as nutriment for the bodily system. Aliments are of the most diverse character, but all of them must contain nutritious matter of some kind, which, being extracted by the act of digestion, enters the blood, and effects by assimilation the repair of the body. Alimentary matter, therefore, must be similar to animal substance, or transmutable into such. All alimentary substances must, therefore, be composed in a greater or less degree of soluble parts, which easily lose their peculiar qualities in the process of digestion, and correspond to the elements of the body. The food of animals consists for the most part of substances containing little oxygen and exhibiting a high degree

of chemical combination, in which respects they differ from most substances that serve as sustenance for plants, which are generally highly oxidized and exhibit little chemical combination. According to the nature of their constituents most of the aliments of animals are divided into nitrogenous (consisting of carbon, hydrogen, and oxygen along with nitrogen, and also of sulphur and phosphorus) and non-nitrogenous (consisting of carbon, hydrogen, and oxygen without nitrogen). Water and salts are usually considered as forming a third group, and, in the widest sense of the word aliment, oxygen alone, which enters the blood in the lungs, forms a fourth. The articles used as food by man do not consist entirely of nutritious substances, but with few exceptions are compounds of various nutritious with indigestible and accordingly innutritious substances. The only nitrogenous aliments are albuminous substances, and these are contained largely in animal food (flesh, eggs, milk, cheese). The principal non-nitrogenous substance obtained as food from animals is fat. Sugar is so obtained in smaller quantities (in milk). While some vegetable substances also contain much albumen, very many of them are rich in starch. Among vegetable substances the richest in albumen are the legumes (peas, beans, and lentils), and following them come the cereals (wheat, oats, &c.). Sugar, water, and salts may pass without any change into the circulatory system; but albuminous substances cannot do so without being first rendered soluble and capable of absorption (in the stomach and intestines); starch must be converted into sugar and fat emulsified (chiefly by the action of the pancreatic juice). One of the objects of cooking is to make our food more susceptible of the operation of the digestive fluids.

The relative importance of the various nutritious substances that are taken into the system and enter the blood depends upon their chemical constitution. The albuminous substances are the most indispensable, inasmuch as they form the material by which the constant waste of the body is repaired, whence they are called by Liebig the substance-formers. But a part of the operation of albuminous nutriment may be performed equally well, and at less cost, by non-nitrogenous substances, that part being the maintenance of the temperature of the body. As is well known, the temperature of warm-blooded animals is con-

siderably higher than the ordinary temperature of the surrounding air, in man about 98° Fahr., and the uniformity of this temperature is maintained by the heat which is set free by the chemical processes (of oxidation) which go on within the body. Now these processes take place as well with non-nitrogenous as with nitrogenous substances. The former are even preferable to the latter for the keeping up of these processes; by oxidation they yield larger quantities of heat with less labour to the body, and they are hence called the heat-givers. The best heat-giver is fat. Albuminous matters are not only the tissue-formers of the body; they also supply the vehicle for the oxygen, inasmuch as it is of such matters that the blood corpuscles are formed. The more red blood corpuscles an animal possesses, the more oxygen can it take into its system, and the more easily and rapidly can it carry on the process of oxidation and develop heat. Now only a part of the heat so developed passes away into the environment of the animal; another part is transformed within the body (in the muscles) into mechanical work. Hence it follows that the non-nitrogenous articles of food produce not merely heat but also work, but only with the assistance of albuminous matters, which, on the one hand, compose the working machine, and, on the other hand, convey the oxygen necessary for oxidation.

The wholesome or unwholesome character of any aliment depends, in a great measure, on the state of the digestive organs in any given case, as also on the method in which it is cooked. Very often a simple aliment is made indigestible by artificial cookery. In any given case the digestive power of the individual is to be considered in order to determine whether a particular aliment is wholesome or not. In general, therefore, we can only say that that aliment is healthy which is easily soluble, and is suited to the power of digestion of the individual. Man is fitted to derive nourishment both from animal and vegetable aliment, but can live exclusively on either. The nations of the North incline generally more to animal aliments; those of the South, and the orientals, more to vegetable. The inhabitants of the most northern regions live almost entirely upon animal food, and very largely on fat on account of its heat-giving property. See *Dietetics, Digestion, Adulteration*, &c.

Alimentary Canal, a common name given

to the œsophagus, stomach, and intestines of animals. See *Œsophagus, Intestine, Stomach*.

Al'imony, in law, the allowance to which a woman is entitled while a matrimonial suit is pending between her and her husband, or after a legal separation from her husband, not occasioned by adultery or elopement on her part.

Al'iquot Part is such part of a number as will divide and measure it exactly without any remainder. For instance, 2 is an aliquot part of 4, 3 of 12, and 4 of 20.

Alisma'ceæ, the water-plantain family, a natural order of endogenous plants, the members of which are herbaceous, annual or perennial; with petiolate leaves sheathing at the base, hermaphrodite (rarely unisexual) flowers, disposed in spikes, panicles, or racemes. They are floating or marsh plants, and many have edible fleshy rhizomes. They are found in all countries, but especially in Europe and North America, where their rather brilliant flowers adorn the pools and streams. The principal genera are *Alisma* (water-plantain) and *Sagittaria* (arrow-head).

Al'ison, Rev. ARCHIBALD, a theologian and writer on æsthetics, born at Edinburgh in 1757; died there in 1839. He studied at Glasgow and at Balliol College, Oxford, entered the English Church, and finally (1800) settled as the minister of an Episcopal chapel at Edinburgh. He published two volumes of sermons, and a work entitled *Essays on the Nature and Principles of Taste* (1790), in which he maintains that all the beauty of material objects depends upon the associations connected with them.

Al'ison, SIR ARCHIBALD, lawyer and writer of history, son of the above, was born in Shropshire in 1792, and died in 1867, near Glasgow. He was educated at the University of Edinburgh, and in 1814 was admitted to the Scottish bar. He spent the next eight years in continental travel. On his return he was appointed advocate-depute, which post he held till 1830. In 1832 he published *Principles of the Criminal Law of Scotland*, and in 1833 *The Practice of the Criminal Law*. He was appointed sheriff of Lanarkshire in 1834, and retained this post till his death. He was made a baronet in 1852. His chief work—*The History of Europe, from 1789 to 1815*—was first issued in ten vols. 1833–42, the narrative being subsequently brought down to 1852, the beginning of the second French Empire. This work displays industry and research.

and is generally accurate, but not very readable. Its popularity, however, has been immense, and it has been translated into French, German, Arabic, Hindustani, &c. Among Sir Archibald's other productions are Principles of Population; Free-trade and Protection; England in 1815 and 1845; Life of the Duke of Marlborough, &c.

His son, LIEUT.-GENERAL SIR ARCHIBALD ALISON, born in 1826, entered the army in 1846, and served in the Crimea, in India during the mutiny, and in the Ashantee expedition of 1873-4. In Egypt, in 1882, he led the Highland Brigade at the battle of Tel-el-Kebir, and afterwards was left in command of the British army of occupation, returning home with honours in 1883.

Aliwal', a village of Hindustan in the Punjab, on the left bank of the Satlej, celebrated from the battle fought in its vicinity, January 28, 1846, between the Sikhs and a British army commanded by Sir Harry Smith, resulting in the total defeat of the Sikhs.

Aliz'arine, a substance contained in the madder root, and largely used in dyeing reds of various shades. Formerly madder root was largely employed as a dye-stuff, its capability of dyeing being chiefly due to the presence in it of alizarine; but the use of the root has been almost superseded by the employment of alizarine itself, prepared artificially from one of the constituents of coal-tar. It forms yellowish-red prismatic crystals, nearly insoluble in cold, but dissolved to a small extent by boiling water, and readily soluble in alcohol and ether. It possesses exceedingly strong tinctorial powers.

Al'kahest, the pretended universal solvent or menstruum of the alchemists.

Al'kali (from Ar. *al-qali*, the ashes of the plant from which soda was first obtained, or the plant itself), a term first used to designate the soluble part of the ashes of plants, especially of sea-weed. Now the term is applied to various classes of bodies having the following properties in common:—(1) solubility in water; (2) the power of neutralizing acids, and forming salts with them; (3) the property of corroding animal and vegetable substances; (4) the property of altering the tint of many colouring matters—thus, they turn litmus, reddened by an acid, into blue; turmeric, brown; and syrup of violets and infusion of red cabbages, green. The alkalies are hydrates, or water in which half

the hydrogen is replaced by a metal or compound radical. In its restricted and common sense the term is applied to four substances only: hydrate of potassium (potash), hydrate of sodium (soda), hydrate of lithium (lithia), and hydrate of ammonium (an aqueous solution of ammonia). In a more general sense it is applied to the hydrates of the so-called *alkaline earths* (baryta, strontia, and lime), and to a large number of organic substances, both natural and artificial, described under *Alkaloid*.—*Volatile alkali* is a name for ammonia.

Alkalim'eter, an instrument for ascertaining the quantity of free alkali in any impure specimen, as in the potashes of commerce. These, besides the carbonate of potash, of which they principally consist, usually contain a portion of foreign salts, as sulphate and chloride of potassium, and as the true worth of the substance, or price for which it ought to sell, depends entirely on the quantity of carbonate, it is of importance to be able to measure it accurately by some easy process. This process depends on the neutralization of the alkali by an acid of known strength, the point of neutralization being determined by the fact that neutral liquids are without action on either red or blue litmus solution. The alkalimeter is merely a graduated tube furnished with a stop-cock at the lower extremity, from which the standard acid is dropped into water in which a certain quantity of the substance is dissolved. The quantity required to produce neutralization being noted, the strength of the liquid tested is easily arrived at. A process of neutralization, exactly the same in principle, may be employed to test the strength of acids by alkalies, the one process being called *alkalimetry*, the other *acidimetry*.

Al'kaloid, a term applied to a class of nitrogenized compounds having certain alkaline properties, found in living plants, and containing their active principles, usually in combination with organic acids. Their names generally end in *ine*, as *morphine*, *quinine*, *aconitine*, *caffeine*, &c. Most alkaloids occur in plants, but some are formed by decomposition. Their alkaline character depends on the nitrogen they contain. Most natural alkaloids contain carbon, hydrogen, nitrogen, and oxygen, but the greater number of artificial ones want the oxygen. The only property common to all alkaloids is that of combining with acids to form salts, and some exhibit an alkaline reaction with

colours. Alkaloids form what is termed the *organic bases* of plants. Although formed originally within the plant, it has been found possible to prepare several of these alkaloids by purely artificial means.

Al'kanet, a dyeing drug, the bark of the root of the *Anchūsa* or *Alkanna tinctoria*, a plant of the order Boraginaceæ, with downy and spear-shaped leaves, and clusters of small purple or reddish flowers. The plant is sometimes cultivated in Britain, but most of the alkanet of commerce is imported from the Levant or from southern France. It imparts a fine deep-red colour to all unctuous substances and is used for colouring oils, plasters, lip-salve, confections, &c.; also in compositions for rubbing and giving colour to mahogany furniture, and to colour spurious port-wine.

Alkan'na, a name of henna. See also *Alkanet*.

Alkar'sin, an extremely poisonous liquid containing kakodyle, together with oxidation products of this substance, and formerly known as *Cadet's fuming liquor*, characterized by its insupportable smell and high degree of spontaneous combustibility when exposed to air.

Al-katif, a town of Arabia, on the Persian Gulf, carrying on a considerable trade. Pop. 6000.

Alkmaar (älk'mär), a town of the Netherlands, prov. of North Holland, on the North Holland Canal, and 20 miles N.N.W. of Amsterdam, regularly built, with a fine church (St. Lawrence) and a richly decorated Gothic town-house; manufactures of salt, sail-cloth, vinegar, leather, &c., and an extensive trade in cattle, corn, butter, and cheese. Pop. 13,304.

Alko'ran. See *Koran*.

Alla breve (brä'vā), a musical direction expressing that a breve is to be played as fast as a semibreve, a semibreve as fast as a minim, and so on.

Al'lah, in Arabic, the name of God, a word of kindred origin with the Hebrew word *Elohim*. *Allah Akbar* (God is great) is a Mohammedan war-cry.

Allahabād' ('city of Allah'), an ancient city of India, capital of the North-west Provinces, on the wedge of land formed by the Junna and the Ganges, largely built of mud houses, though the English quarter has more of a European aspect. Among the remarkable buildings are the fort, occupying the angle between the rivers, and containing the remains of an ancient palace,

and now also the barracks, &c.; the mausoleum and garden of Khosru, the tomb being a handsome domed building; the government offices and courts; government house; the Roman Catholic cathedral; the Central College for the North-west Provinces; the Mayo Memorial and town-hall. Allahabad is one of the chief resorts of Hindu pilgrims, who have their sins washed away by bathing in the waters of the sacred rivers Ganges and Junna at their junction; and is also the scene of a great fair in December and January. There are no manufactures of importance, but a large general and transit trade is carried on. The town is as old as the third century B.C. In the mutiny of 1857 it was the scene of a serious outbreak and massacre. Pop. 1891, 175,246.—The division of ALLAHABAD contains the districts of Cawnpur, Futtehpur, Hamirpur, Banda, Jaunpur, and Allahabad; area, 13,746 square miles; pop. 5,754,855.—The district contains an area of 2833 square miles, about five-sixths being under cultivation. Pop. 1,474,106.

Allaman'da, a genus of American tropical plants, order Apocynaceæ, with large yellow or violet flowers, some of them met with in European greenhouses. A *cathartica* has strong emetic and purgative properties.

Allan, DAVID, a Scottish painter, born 1744, died 1796. He studied in Foulis's academy of painting and engraving in Glasgow, and for sixteen years in Italy; finally establishing himself at Edinburgh, where he succeeded Runciman as master of the 'Trustees' Academy. His illustrations of the Gentle Shepherd, the Cotter's Saturday Night, and other sketches of rustic life and manners in Scotland, obtained for him the name of the 'Scottish Hogarth.'

Allan, SIR WILLIAM, a distinguished Scottish artist, born in 1782, died in 1850. He was a fellow student with Wilkie in Edinburgh, afterwards a student of the Royal Academy, London; then went to St. Petersburg, and remained for ten years in the Russian dominions. In 1814 he returned to Scotland, and publicly exhibited his pictures, one of which (Circassian Captives) made his reputation. He now turned his attention to historical painting, and produced Knox admonishing Mary Queen of Scots, Murder of Rizzio, Exiles on their way to Siberia, The Slave Market at Constantinople, &c.; latterly also battle scenes, as the Battle of Prestonpans, Nelson board

ing the San Nicolas, and two pictures of the Battle of Waterloo, the one from the British, the other from the French position, and delineating the actual scene and the incidents therein taking place at the moment chosen for the representation. One of these Waterloo pictures was purchased by the Duke of Wellington. He travelled extensively, visiting Italy, Greece, Asia Minor, Spain, and Barbary. In 1835 he became R.A., in 1838 president of the Scottish Academy, in 1842 he was knighted.

Allan'tois, a structure appearing during the early development of vertebrate animals—Reptiles, Birds, and Mammalia. It is largely made up of blood-vessels, and, especially in birds, attains a large size. It forms the inner lining to the shell, and may thus be viewed as the surface by means of which the respiration of the embryo is carried on. In Mammalia the allantois is not so largely developed as in Birds, and it enters largely into the formation of the placenta.

Alleghany (al-le-gā'ni), a river of Pennsylvania and New York, which unites with the Monongahela at Pittsburg to form the Ohio; navigable nearly 200 miles above Pittsburg.

Alleghany Mountains, a name sometimes used as synonymous with Appalachians, but also often restricted to the portion of those mountains that traverses the states of Virginia, Maryland, and Pennsylvania from south-west to north-east, and consists of a series of parallel ridges for the most part wooded to the summit, and with some fertile valleys between. Their mean elevation is about 2500 feet; but in Virginia they rise to over 4000.

Allegheny (al-le-gen'i), a city of the United States, in Pennsylvania, on the river Alleghany, opposite Pittsburg, of which it may be considered virtually to be a suburb, and with which it is connected by six bridges. The principal industries are connected with iron and machinery. Pop. 105,287. Also called *Allegheny City*.

Alle'giance (from L. *alligare*, to bind), according to Blackstone, is 'the tie or *ligamen* which binds the subject to the sovereign in return for that protection which the sovereign affords the subject,' or, generally, the obedience which every subject or citizen owes to the government of his country. It used to be the doctrine of the English law that natural-born subjects owe an allegiance which is intrinsic and perpe-

tual, and which cannot be divested by any act of their own; but this is no longer the case. Aliens owe a temporary or local allegiance to the government under which they for the time reside. A usurper in undisturbed possession of the crown is entitled to allegiance; and thus treasons against Henry VI. were punished in the reign of Edward IV., though the former had, by act of Parliament, been declared a usurper.

Al'legory, a figurative representation in which the signs (words or forms) signify something besides their literal or direct meaning. In rhetoric allegory is often but a continued simile. Parables and fables are a species of allegory. Sometimes long works are throughout allegorical, as Spenser's *Faerie Queene* and Bunyan's *Pilgrim's Progress*. When an allegory is thus continued it is indispensable to its success that not only the allegorical meaning should be appropriate, but that the story should have an interest of its own in the direct meaning apart from the allegorical signification. Allegory is often made use of in painting and sculpture as well as in literature.

Allegri (āl-lā'grē), GREGORIO, an Italian composer, born at Rome about 1580, died there about 1650; celebrated for his *misereere* music to the fifty-seventh psalm, which in the Latin version begins with that word.

Allegro (Italian āl-lā'grō), a musical term expressing a more or less quick rate of movement, or a piece of music or movement in lively time. *Allegro moderato*, moderately quick; *allegro maestoso*, quick but with dignity; *allegro assai* and *allegro molto*, very quick; *allegro con brio* or *con fuoco*, with fire and energy; *allegroissimo*, with the utmost rapidity.

Allein (al'en), JOSEPH, English Nonconformist divine; born 1633, died 1668; the author of a popular religious book entitled, *An Alarm to Unconverted Sinners*.

Allein (al'en), RICHARD, English Nonconformist divine; born in 1611, died 1681; rector for twenty years of Batcombe (Somerset); deprived of his living at the Restoration, and imprisoned for preaching. He wrote, among other things, *Vindiciæ Pietatis*, or a Vindication of Godliness, which was condemned to be burned in the royal kitchen.

Alleluia. See *Halleluia*.

Allemande (āl-mānd), a kind of slow, graceful dance, invented in France in the time of Louis XIV., and again in vogue in the time of the First Empire.

Allen, BOG OF, the name applied to a series of bogs in Ireland (not to one continuous morass), dispersed, often widely apart, with extensive tracts of dry cultivated soil between, over a broad belt of land stretching across the centre of the country, the bogs being, however, all on the east side of the Shannon.

Allen, ETHAN, an American revolutionary partisan and general; born 1737, died 1789. He surprised and captured Ticonderoga Fort (1775); attacked Montreal, and was captured and sent to England, being exchanged in 1778; wrote against Christianity.—His younger brother, IRA, was also prominent in the revolutionary era.

Allen, JOHN, a Scotch political and historical writer; born in 1771, died in 1843. He studied medicine, and became M.D. of Edinburgh University. In 1801 he went abroad with Lord Holland and family, and henceforth he maintained this connection, being long an inmate of Holland House (London) and a member of the brilliant society that assembled there. He contributed many articles to the *Edinburgh Review*; wrote an *Inquiry into the Rise and Growth of the Royal Prerogative in England*; *Vindication of the Ancient Independence of Scotland*; &c.

Allen, RALPH, celebrated as a philanthropist, and as the friend of Pope, Fielding, and the elder Pitt, was born in 1694, died in 1764. He lived mostly at Bath, where he made a large income as farmer of a system of posts and as owner of quarries. He is the prototype of Squire Allworthy in Fielding's *Tom Jones*; and after the novelist's death he took charge of his family. Pope, who received many kindnesses at his hands, referred to him in the lines:

Let humble Allen, with an awkward shame,
Do good by stealth, and blush to find it fame.

With Pitt he was on intimate terms, and left him £1000 by will. Hurd, Sherlock, and Warburton were also his friends.

Allen, THOMAS, an English mathematician, philosopher, antiquarian, and astrologer, born in 1542, died in 1632. He studied at Oxford, and lived the greater part of his life in learned retirement, corresponding with many of the famous men of his time. In his own day he was generally reputed a dealer in the black art.

Allen, WILLIAM, cardinal, an English Roman Catholic of the time of Queen Elizabeth, a strenuous opponent of Protes-

tantism and supporter of the claims of Philip II. to the English throne; born 1532, died 1594. It was by his efforts that the English college for Catholics at Douay was established. He was made cardinal in 1587. His writings were numerous.

Allen, WILLIAM, D.D., American clergyman and author; born 1784, died 1863. He was president of Bowdoin College 1820–1839; author of *American Biographical and Historical Dictionary*; a *Supplement to Webster's Dictionary*; *Poems*, &c.

Allenstein (äl'len-stîn), a town in East Prussia, 65 miles south of Königsberg, on the Alle, with breweries and manufactures of iron and lucifer matches. Pop. 7610.

Allentown, a town in the United States, Pennsylvania, on Lehigh river, 18 miles above its junction with the Delaware. It has an important trade in coal and iron ore, with large blast-furnaces, rolling-mills, &c. Pop. in 1890, 25,228.

Allep'pi. See *Aulapalay*.

Alleyn (al'len), EDWARD, an actor and theatre proprietor in the reigns of Elizabeth and James I., friend of Jonson and Shakespeare; born 1566, died 1626. Having become wealthy, he built Dulwich College, under the name of 'The College of God's Gift,' in 1613–17. See *Dulwich*.

All-fours, a game at cards, which derives its name from the four chances of which it consists, for each of which a point is scored. These chances are *high*, or the ace of trumps, or next best trump out; *low*, or the deuce of trumps, or next lowest trump out; *jack*, or the knave of trumps; *game*, the majority of pips collected from the tricks taken by the respective players. The player who has all these is said to have *all-fours*. It is played by two or four persons with the full pack. The ace counts four, the king three, queen two, knave one, ten ten.

All-hallows, **All-hallowmas**, a name for All-saints' Day.

Al'lia, a small affluent of the Tiber, joining it about 12 miles from Rome, famous for the defeat sustained by the Roman army from Brennus and his Gauls, resulting in the capture and sack of Rome, about 390 B.C.

Allia'ceous Plants, plants belonging to the genus *Allium* (order Liliaceæ), that to which the onion, leek, garlic, shalot, &c., belong, or to other allied genera, and distinguished by a certain peculiar pungent smell and taste characterized as *alliaceous*. This flavour is also found in a few plants having

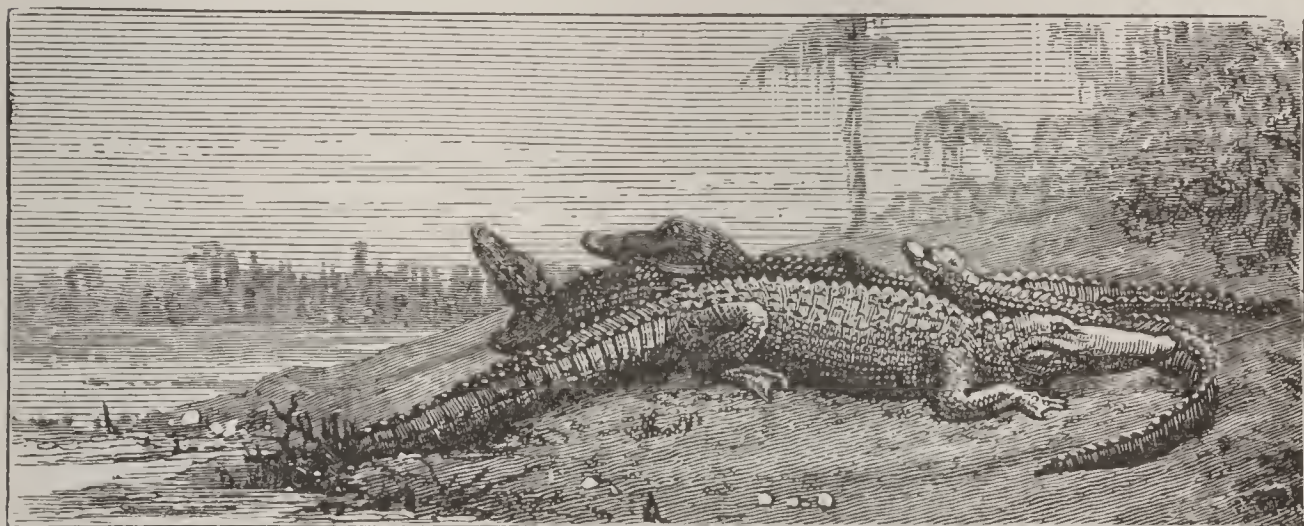
no botanical affinities with the above, as in the *Alliaria officinālis*, or jack-by-the-hedge, a plant of the order Cruciferae.

Alli'ance, a league between two or more powers. Alliances are divided into offensive and defensive. The former are for the purpose of attacking a common enemy, and the latter for mutual defence. An alliance often unites both of these conditions. Offensive alliances, of course, are usually directed against some particular enemy; defensive alliances against anyone from whom an attack may come.

Alliance, HOLY. See *Holy Alliance*.

Alliance, Stark county, Ohio, 57 miles southeast of Cleveland, and 93 miles north-northwest of Pittsburgh; seat of Mt. Union College. Manufactures of bagging, white lead, and rolling mill. Pop. in 1890, 7607.

Al'libone, SAMUEL AUSTIN, LL.D., an American author, born in 1816, died 1889. He compiled a most useful Critical Dictionary of English Literature and British and American Authors (three vols., 1859, 1870, 1871).



Group of Alligators.

Alice, a name of the common shad.

Allier (āl-lē-ā), a central department of France, intersected by the river Allier, and partly bounded by the Loire; surface diversified by offsets of the Cevennes and other ranges, rising in the south to over 4000 feet, and in general richly wooded. It has extensive beds of coal as well as other minerals, which are actively worked, there being several flourishing centres of mining and manufacturing enterprise; mineral waters at Vichy, Bourbon, L'Archambault, &c. Large numbers of sheep and cattle are bred. Area, 2822 miles. Capital, Moulins. Pop. 424,582.—The river Allier flows northward for 200 miles through Lozère, Upper Loire, Puy de Dôme, and Allier, and enters the Loire, of which it is the chief tributary.

Alliga'tion, a rule of arithmetic, chiefly found in the older books, relating to the solution of questions concerning the compounding or mixing together of different ingredients, or ingredients of different qualities or values. Thus if a quantity of sugar worth 8*d.* the lb. and another quantity worth 10*d.* are mixed, the question to be solved by

alligation is, what is the value of the mixture by the pound?

Alliga'tor (a corruption of Sp. *el lagarto*, lit. the lizard—*L. lacertus*), a genus of reptiles of the family Crocodilidæ, differing from the true crocodiles in having a shorter and flatter head, in having cavities or pits in the upper jaw, into which the long canine teeth of the under jaw fit, and in having the feet much less webbed. Their habits are less perfectly aquatic. They are confined to the warmer parts of America, where they frequent swamps and marshes, and may be seen basking on the dry ground during the day in the heat of the sun. They are most active during the night, when they make a loud bellowing. The largest of these animals grow to the length of 18 or 20 feet. They are covered by a dense armour of horny scales, impenetrable to a rifle-ball, and have a huge mouth, armed with strong, conical teeth. They swim with wonderful celerity, impelled by their long, laterally-compressed, and powerful tails. On land their motions are proportionally slow and embarrassed because of the length and unwieldiness of their bodies and the shortness

of their limbs. They live on fish, and any small animals or carrion, and sometimes catch pigs on the shore, or dogs which are swimming. They even sometimes make man their prey. In winter they burrow in the mud of swamps and marshes, lying torpid till the warm weather. The female lays a great number of eggs, which are deposited in the sand or mud, and left to be hatched by the heat of the sun, but the mother alligator is very attentive to her young. The most fierce and dangerous species is that found in the southern parts of the United States (*Alligator Lucius*), having the snout a little turned up, slightly resembling that of the pike. The alligators of South America are there very often called *Caymans*. *A. sclerops* is known also as the *Spectacled Cayman*, from the prominent bony rim surrounding the orbit of each eye. The flesh of the alligator is sometimes eaten. Among the fossils of the south of England are remains of a true alligator (*A. Hantoniensis*) in the Eocene beds of the Hampshire basin.

Alligator-apple (*Anōna palustris*), a fruit allied to the custard-apple, growing in marshy districts in Jamaica, little eaten on account of its narcotic properties.

Alligator-pear (*Persēa gratissima*), an evergreen tree of the natural order Lauraceæ, with a fruit resembling a large pear, 1 to 2 lbs. in weight, with a firm marrow-like pulp of a delicate flavour; called also avocado-pear, or subaltern's butter. It is a native of tropical America.

Al'lingham, WILLIAM, an English poet, born in Ireland in 1828, died 1889. He was a frequent contributor to periodicals, and for some time edited Fraser's Magazine.

Allison, WILLIAM B., U. S. Senator from Iowa, was born in Perry, Ohio, March 2, 1829. After serving for four terms as Representative in Congress from Iowa, in 1873 elected to U. S. Senate, of which body he has since been an able member.

Allitera'tion, the repetition of the same letter at the beginning of two or more words immediately succeeding each other, or at short intervals; as *many men many minds; death defies the doctor*. 'Apt alliteration's artful aid.' Churchill. 'Puffs, powders, patches, bibles, billet-doux.' Pope. In the ancient German and Scandinavian and in early English poetry alliteration took the place of terminal rhymes, the alliterative syllables being made to recur with a certain regularity in the same position in successive verses. In the Vision of

William Concerning Piers the Ploughman, for instance, it is regularly employed as in the following lines:—

Hire robe was ful riche of red scarlet engreyned,
With ribanes of red gold and of riche stones;
Hire arraye me ravysshed such ricchesse saw I
nevere;
I had wondre what she was and whas wyf she
were.

In the hands of some English poets and prose writers of later times alliteration became a mere conceit. It is still employed in Icelandic poetry, and also in Finnish poetry. So far has alliteration sometimes been carried that long compositions have been written every word of which commenced with the same letter.

Al'ium, a genus of plants, order Liliaceæ, containing numerous well-known species of pot-herbs. They are umbelliferous, and mostly perennial, herbaceous plants, but a few are biennial. Among them are garlic (*A. sativum*), onion (*A. Cepa*), leek (*A. Porrum*), chive (*A. Schanopräsum*), shallot (*A. ascalonicum*). The peculiar alliaceous flavour that belongs to them is well known.

Al'loa, a river port of Scotland, on the north bank of the Forth (where there is now a bridge), 7 miles from Stirling, county of Clackmannan. It carries on brewing, distilling, and shipbuilding; has manufactures of woollens, bottles, &c., and a considerable shipping trade. Pop. 8822.

Allocu'tion, an address, a term particularly applied to certain addresses on important occasions made by the pope to the cardinals.

Allo'dium, land held in one's own right, without any feudal obligation to a superior or lord. In England, according to the theory of the British constitution, all land is held of the crown (by *feudal tenure*); the word *allodial* is, therefore, never applied to landed property there.

Allop'athy, the name applied by homœopathists to systems of medicine other than their own; Hahnemann's principle being that 'like cures like,' he called his own system *homœopathy* (Greek, *homoios*, like; *pathos*, disease), and other systems *allopathy* (Greek, *allos*, other, and *pathos*, disease). See *Homœopathy*.

Allot'ment System, the system of allotting small portions of land (say an acre or less) to farm-labourers or other workers, to be cultivated after their regular work by themselves and their families, a system believed by many to be calculated greatly to

improve their condition. An Allotment Act for England passed in 1887, authorizes the sanitary authorities in any locality to determine if there is a sufficient demand for allotments there, and to acquire land to be let to the labouring population resident in their district. Such land may be compulsorily acquired, due compensation being given; but land belonging to a park, pleasure-ground, garden, &c., is not to be so acquired. No person is to hold more than one acre as an allotment; and the rents are to be fixed at such amount as may reasonably be deemed sufficient to guarantee the sanitary authority from loss. No building is to be erected on any allotment other than a tool-house, pig-stye, shed, or the like.

Allot'ropy (Greek *allos*, other, *tropos*, habit), a term used to express the fact that one and the same element may exist in different forms, differing widely in external physical properties. Thus, carbon occurs as the diamond, and as charcoal and plumbago, and is therefore regarded as a substance subject to allotropy.

Al'loway, a parish of Scotland, now included in Ayr parish. Here Burns was born in 1759, and the 'auld haunted kirk,' near his birthplace, was the scene of the dance of witches in Tam o' Shanter.

Alloy', a substance produced by melting together two or more metals, sometimes a definite chemical compound, but more generally merely a mechanical mixture. Most metals mix together in all proportions, but others unite only in definite proportions, and form true chemical compounds. Others again resist combination, and when fused together form not a homogeneous mixture, but a conglomerate of distinct masses. The changes produced in their physical properties by the combination of metals are very various. Their hardness is in general increased, their malleability and ductility impaired. The colour of an alloy may be scarcely different from that of one of its components, or it may show traces of neither of two. Its specific gravity is sometimes less than the mean of that of its component metals. Alloys are always more fusible than the metal most difficult to melt that enters into their composition, and generally even more so than the most easily melted one. Newton's fusible metal, composed of three parts of tin, two or five parts of lead, and five or eight parts of bismuth, melts at temperatures varying from 198° to 210° F. (and therefore in boiling water);

its components fuse respectively at the temperatures 442°, 600°, and 478° F. Sometimes each metal retains its own fusing-point. With few exceptions metals are not much used in a pure state. British gold coins contain $8\frac{1}{2}$ per cent alloy; British silver coins, $7\frac{1}{2}$ per cent. Printers' types are made from an alloy of lead and antimony; brass and a numerous list of other alloys are formed from copper and zinc; bronze from copper and tin.

All Saints' Day, a festival of the Christian Church, instituted in 835, and celebrated on the 1st of November in honour of the saints in general.

All Souls' College, a college of Oxford University, founded in 1437 by Henry Chichele, archbishop of Canterbury. Attached to it are the Chichele professorship of international law, and the Chichele professorship of modern history.

All Souls' Day, a festival of the Roman Catholic Church, instituted in 998, and observed on the 2d of November for the relief of souls in purgatory.

Allspice (al'spis), or PIMENTA, is the dried berry of a West Indian species of myrtle (*Myrtus Pimenta*), a beautiful tree with white and fragrant aromatic flowers and leaves of a deep shining green. Pimenta is thought to resemble in flavour a mixture of cinnamon, nutmegs, and cloves, whence the popular name of *allspice*; it is also called Jamaica pepper. It is employed in cookery, also in medicine as an agreeable aromatic, and forms the basis of a distilled water, a spirit, and an essential oil.

All'ston (al'stun), WASHINGTON, an American painter; born 1779, died 1843. He studied in London and Rome, and is most celebrated for his pictures of scriptural subjects. He also wrote poems and a novelette (Monaldi).

Allu'vium (Latin, *alluvium*—*ad*, to, and *luo*, to wash), deposits of soil collected by the action of water, such as are found in valleys and plains, consisting of loam, clay, gravel, &c., washed down from the higher grounds. Great alterations are often produced by alluvium—deltas and whole islands being often formed by this cause. Much of the rich land along the banks of rivers is alluvial in its origin.

Allygurh. See ALIGARH.

Alma, a small river of Russia, in the Crimea, celebrated from the victory gained by the allied British and French over the Russians, September 20, 1854.

Al'mack's, the name formerly given to

certain assembly-rooms in King Street, St. James's, London, derived from Almack, a tavern-keeper, by whom they were built, and whose real name is said to have been M'Call; now known as *Willis's Rooms*. They were first opened about 1770, and became famous for the extreme exclusiveness displayed by the lady patronesses in regard to the admission of applicants for tickets to the balls held here—only those of the most assured social standing being admitted.

Alma'da, a town of Portugal, on the Tagus, opposite Lisbon. Pop. 4580.

Almaden', a town of Spain, province of Ciudad-Real, celebrated both in ancient and modern times for its mines of quicksilver (in the form of cinnabar). Pop. 7421.

Al'maden, a place in California, U.S., about 60 m. S.E. of San Francisco, with rich quicksilver mines, the product of which has been largely employed in gold and silver mining.

Al'magest, the Arabic (semi-Greek) name of a celebrated astronomical work composed by Claudius Ptolemy.

Alma'gro, an old town of Spain, prov. Ciudad-Real (New Castile), with important lace manufactures. Pop. 8628.

Alma'gro, DIEGO DE, Spanish 'Conquistador,' a foundling, born in 1475, killed 1538. He took part with Pizarro in the conquest of Peru, and after frequent disputes with Pizarro about their respective shares in their conquests led an expedition against Chili, which he failed to conquer. On his return a struggle took place between him and Pizarro, in which Almagro was finally overcome, taken prisoner, strangled, and afterwards beheaded. He was avenged by his son, who raised an insurrection in which Pizarro was assassinated in 1541. The younger Almagro was put to death in 1542 by De Castro, the new viceroy of Peru.

Almalee', a town of south-western Asiatic Turkey, 50 miles from Adalia, with thriving manufactures and a considerable trade. Pop. 12,000.

Al'ma Ma'ter (L., fostering or bounteous mother), a term familiarly applied to their own university by those who have had a university education.

Al-Mamun (inā-mön'), a caliph of the Abasside dynasty, son of Harun-al-Rashid, born 786, died 833. Under him Bagdad became a great centre of art and science.

Al'manac, a calendar, in which are set down the rising and setting of the sun, the phases of the moon, the most remarkable

positions and phenomena of the heavenly bodies, for every month and day of the year; also the several fasts and feasts to be observed in the church and state, &c., and often much miscellaneous information likely to be useful to the public. The term is of Arabic origin, but the Arabs were not the first to use almanacs, which indeed existed from remote ages. In England they are known from the fourteenth century, there being several English almanacs of this century existing in MS. They became generally used in Europe within a short time after the invention of printing; and they were very early remarkable, as some are still, for the mixture of truth and falsehood which they contained. Their effects in France were found so mischievous, from the pretended prophecies which they published, that an edict was promulgated by Henry III. in 1579 forbidding any predictions to be inserted in them relating to civil affairs, whether those of the state or of private persons. In the reign of James I. of England letters-patent were granted to the two universities and the Stationers' Company for an exclusive right of printing almanacs, but in 1775 this monopoly was abolished. During the civil war of Charles I., and thence onward, English almanacs were conspicuous for the unblushing boldness of their astrological predictions, and their determined perpetuation of popular errors. The most famous English almanac was Poor Robin's Almanack, which was published from 1663 to 1775. Gradually, however, a better taste began to prevail, and in 1828 the Society for the Diffusion of Useful Knowledge, by publishing the British Almanac, had the merit of taking the lead in the production of an unexceptionable almanac in Great Britain. The example thus set has been almost universally adopted. The circulation of almanacs continued to be much cramped by the very heavy duty of one shilling and threepence per copy till 1834, when this duty was abolished. About 200 new almanacs were started immediately on the repeal. Almanacs, from their periodical character, and the frequency with which they are referred to, are now more and more used as vehicles for conveying statistical and other useful information, some being intended for the inhabitants of a particular country or district, others for a particular class or party. Some of the almanacs that are regularly published every year are extremely useful, and are indeed almost indis-

pensable to men engaged in official, mercantile, literary, or professional business. Such in Great Britain are Thom's Official Directory of the United Kingdom, the British Almanac with its Companion, Oliver and Boyd's Edinburgh Almanac, and Whitaker's Almanac. In the United States is published The American Almanac, a useful compilation. The Almanach de Gotha, which has appeared at Gotha since 1764, contains in small bulk a wonderful quantity of information regarding the reigning families and governments, the finances, commerce, population, &c., of the different states throughout the world. It is published both in a French and in a German edition. Almanacs that pretend to foretell the weather and occurrences of various kinds are still popular in Britain, France, and elsewhere. — *The Nautical Almanack* is an important work published annually by the British government, two or three years in advance, in which is contained much useful astronomical matter, more especially the distances of the moon from the sun, and from certain fixed stars, for every three hours of apparent time, adapted to the meridian of the Royal Observatory, Greenwich. By comparing these with the distances carefully observed at sea the mariner may, with comparative ease, infer his longitude to a degree of accuracy unattainable in any other way, and sufficient for most nautical purposes. This almanac was commenced in 1767 by Dr. Maskelyne, astronomer royal. The French *Connaissance des Temps* is published with the same views as the English Nautical Almanac, and nearly on the same plan. It commenced in 1679. Of a similar character is the *Astronomisches Jahrbuch* published at Berlin.

The American *Ephemeris and Nautical Almanac* is issued annually since 1855 by the Bureau of Navigation of the U. S.

Alman'sa, a town of south-eastern Spain (Murcia), near which was fought (April 25, 1707) a decisive battle in the war of the Spanish succession, when the French, under the Duke of Berwick, defeated the Anglo-Spanish army under the Earl of Galway. Pop. 7334.

Alman'zur, or **ALMANSUR**, a caliph of the Abasside dynasty, reigned 754-775. He was cruel and treacherous and a persecutor of the Christians, but a patron of learning.

Alma-Tad'ema, **LAWRENCE**, a Dutch painter, born in 1836, resident since 1870 in England, where he is a naturalized subject.

In 1876 he was elected an associate of the Royal Academy, in 1879 an academician; he is also a member of various foreign academies. He is especially celebrated for his pictures of ancient Roman, Greek, and Egyptian life, which are painted with great realism and archæological correctness.

Al'meh, the name given in Egypt to a class of girls whose profession is to sing for the public amusement, being engaged to perform at feasts and other entertainments (including funerals). Many of them are skilful improvisatrici.

Almeida (āl-mā'i-dā), one of the strongest fortresses in Portugal, in the province of Beira, near the Spanish border, on the Coa. Pop. 2000. Taken by Masséna from the English in 1810, retaken by Wellington in 1811.

Almeida (dāl-mā'i-dā), **FRANCISCO D'**, first Portuguese viceroy of India, son of the Conde de Abrantes, born about the middle of the fifteenth century. He fought with renown against the Moors, and being appointed governor of the new Portuguese settlements on the African and Indian coasts, he sailed for India in 1505, accompanied by his son Lorenzo and other eminent men. In Africa he took possession of Quiloa and Mombas, and in the East he conquered Cananor, Cochin, Calicut, &c., and established forts and factories. His son Lorenzo discovered the Maldives and Madagascar, but perished in an attack made on him by a fleet sent by the Sultan of Egypt, with the aid of the Porte and the Republic of Venice. Having signally defeated the Mussulmans (1508), and avenged his son, and being superseded by Albuquerque, he sailed for Portugal, but was killed in a skirmish on the African coast in 1510.

Almelo', a town of Holland, prov. Overijssel, on the Vechte; with manufactures of linen. Pop. 7758.

Almeria (āl-mā-rē'à), a fortified seaport of southern Spain, capital of prov. Almeria, near the mouth of a river and on the gulf of same name, with no building of consequence except a Gothic cathedral, but with an important trade, exporting lead, esparto, barilla, &c. The province, which has an area of 3300 sq. miles, is generally mountainous, and rich in minerals. Pop. of town, 40,323; of province, 349,854.

Almodo'var, a town of Spain, prov. Ciudad-Real (New Castile), near the Sierra Morena. Pop. 10,362.

Almohades (al'mo-hād̄z), an Arabic or Moorish dynasty that ruled in Africa and Spain in the twelfth and thirteenth centuries, founded by a religious enthusiast. They overthrew the Almoravides in Spain, but themselves received a defeat in 1212 from which they did not recover, and in 1269 were overthrown in Africa.

Al-mokanna. See **MOKANNA**.

Almond (ā'mund), the fruit of the almond-tree (*Amygdalus communis*), a tree which grows usually to the height of 20 feet, and is akin to the peach, nectarine, &c. (order Rosaceæ). It has beautiful pinkish flowers that appear before the leaves, which are oval, pointed, and delicately serrated. It is a native of Africa and Asia, naturalized in southern Europe, and cultivated in England for its beauty, as its fruit does not ripen there.



Almond (*Amygdalus communis*).

The fruit is a drupe, ovoid, and with downy outer surface; the fleshy covering is tough and fibrous; it covers the compressed wrinkled stone inclosing the seed or almond within it. There are two varieties, one sweet and the other bitter; both are produced from *A. communis*, though from different varieties. The chief kinds of sweet almonds are the Valencian, Jordan, and Malaga. They contain a bland fixed oil, consisting chiefly of olein. Bitter almonds come from Magador, and besides a fixed oil they contain a substance called *emulsin*, and also a bitter crystalline substance called *amygdalin*, which, acting on the emulsin, produces prussic acid, whence the aroma of bitter almonds when mixed with water. *Almond-oil*, a bland fixed oil, is expressed from the kernels of either sweet or bitter almonds, and is used by perfumers and in medicine. A poisonous essential oil is obtained from bitter almonds, which is used for flavouring by cooks and confectioners, also by perfumers and in medicine. The name *almond*, with a qualifying word prefixed, is also given to the seeds of other species of plants; thus, *Java*

almonds are the kernels of *Canarium commune*.

Almondbury (ā'mund-be-ri), a town of England, west riding of Yorkshire, two miles S.E. of Huddersfield, with manufactures of woollens, cotton and silk goods. Pop. 13,977.

Al'moner, an officer of a religious establishment to whom belonged the distribution of alms. The grand almoner (*grand aumonier*) of France was the highest ecclesiastical dignitary in that kingdom before the revolution. The lord almoner, or lord high almoner of England, is generally a bishop, whose office is well-nigh a sinecure. He distributes the sovereign's doles to the poor on Maundy Thursday.

Almo'ra, a town and fortress of Hindustan, in the North-west Provinces, capital of Kumaon, 170 miles E.N.E. from Delhi, a thriving little place. Pop. about 6000.

Almo'ravides (-vīdz), a Moorish dynasty which arose in north-western Africa in the eleventh century, and, having crossed the Straits of Gibraltar, gained possession of all Arabic Spain, but was overthrown by the Almohades in the following century.

Al'mug (or **AL'GUM**) tree, names which occur in 1 Ki. x. 11, 12 and 2 Chr. ii. 8, and ix. 10, 11, as the names of trees of which the wood was used for pillars in the temple and the king's house, for harps and psalteries, &c. They are said in one passage to be hewn in Lebanon, in another to be brought from Ophir. They have been identified by critics with the red sandal-wood of India. Some of them may possibly have been transplanted to Lebanon by the Phœnicians.

Almuñecar (āl-mūn-ye-kär'), a seaport of Spain, Andalusia, on the Mediterranean. Pop. 8194.

Al'nager, formerly, in England, an official whose duty it was to inspect, measure, and stamp woollen cloth.

Al'nus. See **Alder**.

Alnwick (an'ik), a town of England, county town of Northumberland, 34 miles north from Newcastle, near the Aln. It is well built, and carries on tanning, brewing, and a general trade. Alnwick Castle, residence of the dukes of Northumberland, for many centuries a fortress of great strength, stands close to the town. Pop. 6746.

Aloe (al'ō), the name of a number of plants belonging to the genus *Aloë* (order Liliaceæ), some of which are not more than a few inches, whilst others are 30 feet and upwards in height; natives of Africa and

other hot regions; leaves fleshy, thick, and more or less spinous at the edges or extremity; flowers with a tubular corolla. Some of the larger kinds are of great use, the fibrous parts of the leaves being made into cordage, fishing nets and lines, cloth, &c. The inspissated juice of several species is used in medicine, under the name of *aloes*, forming a bitter purgative. The principal drug producing species are, the Socotrine aloë (*A. Socotrīna*), the Barbadoes aloë (*A. vulgāris*), the Cape aloë (*A. spicāta*), &c. A beautiful violet colour is afforded by the leaves of the Socotrine aloë. The American aloë (see *Agave*) is a different plant altogether; as are also the aloes or lign-aloes of Scripture, which are supposed to be the *Aquilaria Agallōchum*, or aloes-wood (which see). *Aloë fibre* is obtained from species of *Aloë*, *Agave*, *Yucca*, &c., and is made into coarse fabrics, ropes, &c.

Aloes-wood, **EAGLE-WOOD**, or **AGILA-WOOD**, the inner portion of the trunk of *Aquilāria ovāta* and *A. Agallōchum*, forest trees belonging to the order Aquilariaceæ, found in tropical Asia, and yielding a fragrant resinous substance, which, as well as the wood, is burned for its perfume. Another tree, the *Aloexylon Agallochum* (order Leguminosæ), also produces aloes-wood. This wood is supposed to be the lign-aloes of the Bible.

Alope'cia, a variety of baldness in which the hair falls off from the beard and eyebrows, as well as the scalp.

Alopecu'rus, a genus of grasses. See *Foxtail-grass*.

Alo'ra, a town of Southern Spain, prov. Malaga; pop. 10,014.

Alost, or **AALST** (ä'lost, älst), a town of Belgium, 15 miles w.n.w. of Brussels, on the Dender (here navigable), with a beautiful, though unfinished, church, and an ancient town-hall; manufactures of lace, thread, linen and cotton goods, &c., and a considerable trade. Pop. (1880), 21,631.

Alpac'a, a ruminant mammal of the camel tribe, and genus *Auchēnia* (*A. Paco*), a native of the Andes, especially of the mountains of Chili and Peru, and so closely allied to the llama that by some it is regarded rather as a smaller variety than a distinct species. It has been domesticated, and remains also in a wild state. In form and size it approaches the sheep, but has a longer neck. It is valued chiefly for its long, soft, and silky wool, which is straighter than that of the sheep, and very strong, and is

woven into fabrics of great beauty, used for shawls, clothing for warm climates, coat-linings, and umbrellas, and known by the



Alpaca (*Auchēnia Paco*).

same name. Its flesh is pleasant and wholesome.

Alpena, Mich., U. S., 130 miles north-east of Saginaw City. It is an important lumber centre, has also two foundries and two banks. Pop. in 1890, 11,283.

Alpen-stock (German), a strong tall stick shod with iron, pointed at the end so as to take hold in, and give support on, ice and other dangerous places in climbing the Alps and other high mountains.

Alpes (älp), the name of three departments in the south-east of France, all more or less covered by the Alps or their offshoots:—**BASSES-ALPES** (bäs-älp; Lower Alps) has mountains rising to a height of 8000 to 10,000 feet, is drained by the Durance and its tributaries, and is the most thinly peopled department in France; area, 2685 miles; capital, Digne. Pop. 1891, 124,285. **HAUTES-ALPES** (ōt-älp; Upper Alps), mostly formed out of ancient Dauphiné, traversed by the Cottian and Dauphiné Alps (highest summits 12,000 ft.), drained chiefly by the Durance and its tributaries. It is the lowest department in France in point of absolute population; area, 2158 miles; capital, Gap; pop. 115,522.—**ALPES-MARITIMES** (älp-mä-ri-tēm; Maritime Alps) has the Mediterranean on the south, and mainly consists of the territory of Nice, ceded to France by Italy in 1860. The greater part of the surface is covered by the Maritime Alps; the principal river is the Var. It produces in the south, cereals, vines, olives, oranges, citrons, and other fruits; and there are manufactories of perfumes, liqueurs, soap, &c., and valuable fisheries. It is a favourite resort for invalids. Area, 1482 square miles; capital, Nice; pop. 258,571.

Al'pha and **O'mega**, the first and last letters of the Greek alphabet, sometimes used to signify the beginning and the end, or the first and the last of anything; also as a symbol of the Divine Being. They were also formerly the symbol of Christianity, and engraved accordingly on the tombs of the ancient Christians.

Al'phabet (from *Alpha* and *Beta*, the two first letters of the Greek alphabet), the series of characters used in writing a language, and intended to represent the sounds of which it consists. The English alphabet, like most of those of modern Europe, is derived directly from the Latin, the Latin from the ancient Greek, and that from the Phœnician, which again is believed to have had its origin in the Egyptian hieroglyphics, the Hebrew alphabet also having the same origin. The names of the letters in Phœnician and Hebrew must have been almost the same, for the Greek names, which, with the letters, were borrowed from the former, differ little from the Hebrew. By means of the names we may trace the process by which the Egyptian characters were transformed into letters by the Phœnicians. Some Egyptian character would, by its form, recall the idea of a house, for example, in Phœnician or Hebrew *beth*. This character would subsequently come to be used wherever the sound *b* occurred. Its form might be afterwards simplified, or even completely modified, but the name would still remain, as *beth* still continues the Hebrew name for *b*, and *beta* the Greek. Our letter *m*, which in Hebrew was called *mim*, water, has still a considerable resemblance to the zigzag wavy line which had been chosen to represent water, as in the zodiacal symbol for *Aquarius*. The letter *o*, of which the Hebrew name means eye, no doubt originally intended to represent that organ. While the ancient Greek alphabet gave rise to the ordinary Greek alphabet and the Latin, the Greek alphabet of later times furnished elements for the Coptic, the Gothic, and the old Slavic alphabets. The Latin characters are now employed by a great many nations, such as the Italian, the French, the Spanish, the Portuguese, the English, the Dutch, the German, the Hungarian, the Polish, &c., each nation having introduced such modifications or additions as are necessary to express the sound of the language peculiar to it. The Greek alphabet originally possessed only sixteen letters, though the Phœnician had twenty-two.

The original Latin alphabet, as it is found in the oldest inscriptions, consisted of twenty-one letters; namely, the vowels *a, e, i, o*, and *u (v)*, and the consonants *b, c, d, f, h, k, l, m, n, p, q, r, s, t, x, z*. The Anglo-Saxon alphabet had two characters for the digraph *th*, which were unfortunately not retained in later English; it had also the character *æ*. It wanted *j, v, y* (consonant), and *z*. The German alphabet consists of the same letters as the English, but the sounds of some of them are different. Anciently certain characters called *Runic* were made use of by the Teutonic nations, to which some would attribute an origin independent of the Greek and Latin alphabets. While the alphabets of the west of Europe are derived from the Latin, the Russian, which is very complete, is based on the Greek, with some characters borrowed from the Armenian, &c. Among Asiatic alphabets, the Arabian (ultimately of Phœnician origin) has played a part analogous to that of the Latin in Europe, the conquests of Mohammedanism having imposed it on the Persian, the Turkish, the Hindustani, &c. The Sanskrit or Devanāgarī alphabet is one of the most remarkable alphabets of the world. As now used it has fourteen characters for the vowels and diphthongs, and thirty-three for the consonants, besides two other symbols. Our alphabet is a very imperfect instrument for what it has to perform, being both defective and redundant. An alphabet is not essential to the writing of a language, since ideograms or symbols may be used instead, as in Chinese. See **WRITING**.

Alphē'us, now *Rufa*, the largest river of Peloponnesus, flowing westwards into the Ionian Sea.

Alphon'so, the name of a number of Portuguese and Spanish kings. Among the former may be mentioned **Alphonso I.**, the Conqueror, first king of Portugal, son of Henry of Burgundy, the Conqueror and first Count of Portugal; born 1110, fought successfully against the Spaniards and the Moors, named himself king of Portugal, and was as such recognized by the pope; died 1185.—**Alphonso V.**, the African, succeeded his father, Edward I., 1438. Conquered Tangiers; died 1481. During his reign Prince Henry the Navigator continued the important voyages of discovery already begun by the Portuguese. Under him was drawn up an important code of laws.—Among kings of Spain may be mentioned **Alphonso X.**, king of Castile and

Leon, surnamed the *Astronomer*, the *Philosopher*, or the *Wise*; born in 1226, succeeded in 1252. Being grandson of Philip of Hohenstaufen, son of Frederick Barbarossa, he endeavoured to have himself elected emperor of Germany, and in 1257 succeeded in dividing the election with Richard, earl of Cornwall. On Richard's death in 1272 he again unsuccessfully contested the imperial crown. Meantime his throne was endangered by conspiracies of the nobles and the attacks of the Moors. The Moors he conquered, but his domestic troubles were less easily overcome, and he was finally dethroned by his son Sancho, and died two years after, 1284. Alphonso was the most learned prince of his age. Under his direction or superintendence were drawn up a celebrated code of laws, valuable astronomical tables which go under his name (*Alphonsine Tables*), the first general history of Spain in the Castilian tongue, and a Spanish translation of the Bible.—**Alphonso V.** of Aragon, I. of Naples and Sicily, born in 1385, was the son of Ferdinand I. of Aragon, the throne of which he ascended in 1416, ruling also over Sicily and the island of Sardinia. Queen Joanna of Naples had promised to make him her heir, but at her death in 1435 had left her dominions to René of Anjou. Alphonso now proceeded to take possession of Naples by force, which he succeeded in doing in 1442, and reigned till his death in 1458. He was an enlightened patron of literary men, by whom, in the latter part of his reign, his court was thronged.—**Alphonso XII.**, King of Spain, the only son of Queen Isabella II. and her cousin Francis of Assisi, was born in 1857 and died in 1885. He left Spain with his mother when she was driven from the throne by the revolution of 1868, and till 1874 resided partly in France, partly in Austria. In the latter year he studied for a time at the English military college, Sandhurst, being then known as Prince of the Asturias. His mother had given up her claims to the throne in 1870 in his favour, and in 1874 Alphonso came forward himself as claimant, and in the end of the year was proclaimed by General Martinez Campos as king. He now passed over into Spain and was enthusiastically received, most of the Spaniards being by this time tired of the republican government, which had failed to put down the Carlist party. Alphonso was successful in bringing the Carlist struggle to an end (1876), and henceforth he reigned with little dis-

turbance. He married first his cousin Maria de las Mercedes, daughter of the Duke de Montpensier; second, Maria Christina, archduchess of Austria, whom he left a widow with two daughters, a son being born posthumously.—**Alphonso XIII.**, King of Spain under the regency of his mother, Maria Christina; posthumous son of Alfonso XII.; born May 17, 1886.

Alpine Club, an association of English gentlemen, originating in 1856 or 1857, having as their common bond of union a delight in making the ascent of mountains, in the Alps or elsewhere, difficult to ascend, and in investigating any mountains.

Alpine Crow, **ALPINE CHOUGH** (*Pyrrhocorax alpinus*), a European bird closely akin to the chough of England.

Alpine Plants, the name given to those plants whose habitat is in the neighbourhood of the snow, on mountains partly covered with it all the year round. As the height of the snow-line varies according to the latitude and local conditions, so also does the height at which these plants grow. The mean height for the alpine plants of Central Europe is about 6000 feet; but it rises in parts of the Alps and in the Pyrenees to 9000, or even more. The high grounds clear of snow among these mountains present a very well marked flora, the general characters of the plants being a low dwarfish habit, a tendency to form thick turfs, stems partly or wholly woody, and large brilliantly-coloured and often very sweet-smelling flowers. They are also often closely covered with woolly hairs. In the Alps of Middle Europe the eye is at once attracted by gentians, saxifrages, rhododendrons, primroses of different kinds, &c. Ferns and mosses of many kinds also characterize these regions. Some alpine plants are found only in one locality. Considerable success has attended the attempt to grow alpine plants in gardens.

Alpine Warbler (*Accentor alpinus*), a European bird of the same genus as the hedge-sparrow.

Alpin'ia, a genus of plants. See *Galan-gal*.

Alps, the highest and most extensive system of mountains in Europe, included between lat. 44° and 48° N., and lon. 5° and 18° E., covering great part of Northern Italy, several departments of France, nearly the whole of Switzerland, and a large part of Austria, while its extensive ramifications connect it with nearly all the mountain systems of Europe. The culminating peak is

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Mont Blanc, 15,781 feet high, though the true centre is the St. Gothard, or the mountain mass to which it belongs, and from whose slopes flow, either directly or by affluents, the great rivers of Central Europe, the Danube, Rhine, Rhone, and Po. Round the northern frontier of Italy the Alps form a remarkable barrier, shutting it off at all points from the mainland of Europe, so that, as a rule, it can only be approached from France, Germany, or Switzerland, through high and difficult passes. In the west this barrier approaches close to the Mediterranean coast, and near Nice there is left a free passage into the Italian peninsula between the mountains and the sea. From this point eastward the chain proceeds along the coast till it forms a junction with the Apennines. In the opposite direction it proceeds north-west, and afterwards north to Mont Blanc, on the boundaries of France and Italy; it then turns north-east and runs generally in this direction to the Gross Glockner, in Central Tyrol, between the rivers Drave and the Salza, where it divides into two branches, the northern proceeding north-east towards Vienna, the southern towards the Balkan Peninsula. The principal valleys of the Alps run mostly in a direction nearly parallel with the principal ranges, and therefore east and west. The transverse valleys are commonly shorter, and frequently lead up through a narrow gorge to a depression in the main ridge between two adjacent peaks. These are the passes or *cols*, which may usually be found by tracing a stream which descends from the mountains up to its source.

The Alps in their various great divisions receive different names. The *Maritime Alps*, so called from their proximity to the Mediterranean, extend westward from their junction with the Apennines for a distance of about 100 miles; culminating points Aiguille de Chambeyron, 11,155 feet, and Grand Rioburent, 11,142 feet; principal pass, the Col di Tende (6158 feet), which was made practicable for carriages by Napoleon I. Proceeding northward the next group consists of the *Cottian Alps*, length about 60 miles; principal peaks: Monte Viso, 12,605 feet; Pic des Ecrins, 13,462; Pelvoux, 12,973. Next come the *Graian Alps*, 50 miles long, with extensive ramifications in Savoie and Piedmont; principal peaks: Aiguille de la Sassièrre, 12,326 feet; Grand Paradis, 13,300; Grande Casse, 12,780. To this group belongs Mont Cenis

(6765 feet), over which a carriage road was constructed by Napoleon I., while a railway now passes through the mountain by a tunnel nearly 8 miles long. These three divisions of the Alps are often classed together as the *Western Alps*, while the portion of the system immediately east of this forms the *Central Alps*. The *Pennine Alps* form the loftiest portion of the whole system, having Mont Blanc (in France) at one extremity, and Monte Rosa at the other (60 miles), and including the Alps of Savoy and the Valais. In the east the valley of the upper Rhone separates the Pennine Alps from the great chain of the *Bernese Alps* running nearly parallel, the great peaks of the two ranges being about 20 miles apart. The principal heights of the Pennine Alps are Mont Blanc, 15,781 feet; Monte Rosa, 15,217; Mischabelhörner (Dom), 14,935; Weisshorn, 14,804; Matterhorn, 14,780. In the Bernese Alps, the Finsteraarhorn, 14,026; Aletschhorn, 13,803; Jungfrau, 13,671. The pass of Great St. Bernard is celebrated for its hospice. The most easterly pass is the Simplon, 6595 feet, with a carriage road made by Napoleon I. Further east are the *Lepontine Alps*, divided into several groups. From this run northward and southward numerous streams, the latter to the valleys in which lie the lakes Maggiore, Como, &c. The principal pass is the St. Gothard (6936 feet), over which passes a carriage road to Italy, while through this mountain mass a railway tunnel more than 9 miles long has been opened. Highest peaks: Tödi, 11,887 feet; Monte Leone, 11,696. The *Rhetian Alps*, extending east to about lat. 12° 30', are the most easterly of the Central Alps, and are divided into two portions by the Engadine, or valley of the Inn, and also broken by the valley of the Adige; principal peaks: Piz Bernina, 13,294 feet; Ortlerspitze, 12,814; Monte Adamello, 11,832. The Brenner Pass (4588 feet), from Verona to Innsbruck, and between the Central and the Eastern Alps, is crossed by a railway. On the railway from Innsbruck to the Lake of Constance is the Arlberg Tunnel, over 6 miles long. The *Eastern Alps* form the broadest and lowest portion of the system, and embrace the *Noric Alps*, the *Carnic Alps*, the *Julian Alps*, &c.; highest peak, the Gross Glockner, 12,405 feet. The height of the south-eastern continuations of the Alps rapidly diminishes, and they lose themselves in ranges having nothing in common with the

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great mountain masses which distinguish the centre of the system.

The Alps are very rich in lakes and streams. Among the chief of the former are the lakes of Geneva, Constance, Zürich, Thun, Brienz, on the north side; on the south Maggiore, Como, Lugano, Garda, &c. The drainage is carried to the North Sea by the Rhine, to the Mediterranean by the Rhone, to the Adriatic by the Po, to the Black Sea by the Danube.

In the lower valleys of the Alps the mean temperature ranges from 50° to 60°. Half-way up the Alps it averages about 32°—a height which, in the snowy regions, it never reaches. But even where the temperature is lowest the solar radiation produced by the rocks and snow is often so great as to raise the photometer to 120° and even higher. The exhilarating and invigorating nature of the climate in the upper regions during summer has been acknowledged by all.

In respect to vegetation the Alps have been divided into six zones, depending on height modified by exposure and local circumstances. The first is the olive region. This tree flourishes better on sheltered slopes of the mountains than on the plains of Northern Italy. The vine, which bears greater winter cold, distinguishes the second zone. On slopes exposed to the sun it flourishes to a considerable height. The third is called the mountainous region. Cereals and deciduous trees form the distinguishing features of its vegetation. The mean temperature about equals that of Great Britain, but the extremes are greater. The fourth region is the sub-Alpine or coniferous. Here are vast forests of pines of various species. Most of the Alpine villages are in the two last regions. On the northern slopes pines grow to 6000, and on the southern slopes to 7000 feet above the level of the sea. This is also the region of the lower or permanent pastures where the flocks are fed in winter. The fifth is the pasture region, the term *alp* being used in the local sense of high pasture grounds. It extends from the uppermost limit of trees to the region of perpetual snow. Here there are shrubs, rhododendrons, junipers, bilberries, and dwarf willows, &c. The sixth zone is the region of perpetual snow. The line of snow varies, according to seasons and localities, from 8000 to 9500 feet, but the line is not continuous, being often broken in upon. Few flowering plants

extend above 10,000 feet, but they have been found as high as 12,000 feet.

At this great elevation are found the wild goat and the chamois. In summer the high mountain pastures are covered with large flocks of cattle, sheep, and goats, which are in winter removed to a lower and warmer level. The marmot, and white or Alpine hare, inhabit both the snowy and the woody regions. Lower down are found the wild-cat, fox, lynx, bear, and wolf; the last two are now extremely rare. The vulture, eagle, and other birds of prey frequent the highest elevations, the ptarmigan seeks its food and shelter among the diminutive plants that border upon the snow-line. Excellent trout and other fish are found; but the most elevated lakes are, from their low temperature, entirely destitute of fish.

The geological structure of the Alps is highly involved, and is far, as yet, from being thoroughly investigated or understood. In general three zones can be distinguished, a central, in which crystalline rocks prevail, and two exterior zones, in which sedimentary rocks predominate. The rocks of the central zone consist of granite, gneiss, hornblende, mica slate, and other slates and schists. In the western Alps there are also considerable elevations in the central zone that belong to the Jurassic (Oolite) and Cretaceous formations. From the disposition of the beds, which are broken, tilted, and distorted on a gigantic scale, the Alps appear to have been formed by a succession of disruptions and elevations extending over a very protracted period. Among the minerals that are obtained are iron and lead, gold, silver, copper, zinc, alum, and coal.

There are various points of vantage from which extensive views of Alpine scenery are commanded at the expense of a moderate amount of climbing. The Rigi, which can now be ascended by railway, is one of these. There is an inn at the top, 5905 feet above the level of the sea, and 4468 above the Lake of Lucerne. A favourite view from hence is to watch the sun rise over the Bernese Alps. The Becca di Nona (8415 feet), south of Aosta, gives, according to some authorities, the finest panoramic view to be obtained from any summit of the Alps. Among the most impressive phenomena are the avalanches and the glacier. The most accessible glaciers are those of Aletsch, Chamonix, and Zermatt.

Alpujarras (äl-pö-här'räs), a district of Spain, in Andalusia, between the Sierra Nevada and the Mediterranean, mountainous, but with rich and well-cultivated valleys yielding grain, vines, olives, and other fruits. The inhabitants are Christianized descendants of the Moors.

Alquifou (äl'ki-fö), a sort of lead ore used by potters as a green varnish or glaze.

Alsace (äl-säs; German, *Elsass*), before the French revolution a province of France, on the Rhine, afterwards constituting the French departments of Haut- and Bas-Rhin, and subsequently to the Franco-Prussian war of 1870-71 reunited to Germany, and incorporated in the province of Elsass-Lothringen (Alsace-Lorraine). Alsace is generally a level country, though there are several ranges of low hills richly wooded. The principal river is the Ill. Corn, flax, tobacco, grapes, and other fruits are grown. Area, 3198 sq. miles; population 1,074,626. Alsace was originally a part of ancient Gaul. It afterwards became a dukedom of the German empire. In 1268, the line of its dukes becoming extinct, it was parcelled out to several members of the empire. By the peace of Westphalia, in 1648, a great part of it was ceded to France, which afterwards seized the rest of it, this seizure being recognized by the peace of Ryswick, in 1697. Henceforth, till their recent successes, the Germans used to look with longing eyes on Alsace. The inhabitants mostly speak German, and are of German race. Strasburg is the chief city. The chief productions are wine, hemp, flax, tobacco, madder, copper, iron, &c. See *Alsace-Lorraine*.

Alsace-Lorraine, a province (Reichsland, 'imperial territory') of Germany, on the east of France, partly bounded by the Rhine; area, 5600 sq. miles, of which Alsace occupies 3198 and Lorraine 2402. It is under a lieutenant-governor, and is divided into the districts of Lower and Upper Alsace and Lorraine, at the head of each being a president. The three chief towns are Strasburg, Mühlhausen, and Metz. Pop. 1890, 1,603,987, of whom 1,200,000 are Catholics and 312,000 Protestants.

Alsa'tia, formerly a cant name for Whitefriars, a district in London between the Thames and Fleet Street, and adjoining the Temple, which, possessing certain privileges of sanctuary, became for that reason a nest of mischievous characters, who were generally obnoxious to the law. These privileges were abolished in 1697. The

name *Alsatia* is a Latinized form of *Alsace*, which, being on the frontiers of France and Germany, was a harbour for necessitous or troublesome characters from both countries.

Al'sen, an island of Prussia on the east coast of Schleswig-Holstein, length, 20 miles; breadth, from 5 to 7 miles, diversified with forests, lakes, well-cultivated fields, orchards, and towns. Pop. 22,500.

Al Sirat (sē'rat), in Mohammedan belief the bridge extending over the abyss of hell which must be crossed by every one on his journey to heaven. It is finer than a hair, as sharp as the edge of a sword, and beset with thorns on either side. The righteous will pass over with ease and swiftness, but the wicked will fall into hell below.

Alstrœme'ria, a genus of South American plants, order Amaryllideæ, some of them cultivated in European greenhouses and gardens. *A. Salsilla* and *A. ovata* are cultivated for their edible tubers.

Altaic Languages, a family of languages occupying a portion of Northern and Eastern Europe, and nearly the whole of Northern and Central Asia, together with some other regions, and divided into five branches, the Ugrian or Finno-Hungarian, Samoyedic, Turkic, Mongolic, and Tungusic. Also called *Ural-Altaic* and *Turanian*.

Altai Mountains (äl'tī), an important Asiatic system on the borders of Siberia and Mongolia, partly in Russian and partly in Chinese territory, between lat. 46° and 53° N., lon. 83° and 91° E, but having great eastern extensions. The Russian portion is comprised in the governments of Tomsk and Semipalatinsk, the Chinese in Dsungaria. The rivers of this region, which are large and numerous, are mostly head-waters of the Obi and Irtysh. The mountain scenery is generally grand and interesting. The highest summit is Byeluka ('white mountain,' from its snowy top), height 11,000 feet. The area covered by perpetual snow is very considerable, and glaciers occupy a wide extent. In the high lands the winter is very severe; but on the whole the climate is comparatively mild and is also healthy. The vegetation is varied and abundant. The mountain forests are composed of birch, alder, aspen, fir, larch, stone-pine, &c. The wild sheep has here its native home, and several kinds of deer occur. The Altai is exceedingly rich in minerals, including gold, silver, copper, and iron. The name Altai means 'gold mountain.' The inhabi-

tants are chiefly Russians and Kalmuks. The chief town is Barnaul.

Altamu'ra, a town of South Italy, prov. of Bari, at the foot of the Apennines, walled, well built, and containing a magnificent cathedral. Pop. 20,013.

Altar (al'tar), any pile or structure raised above the ground for receiving sacrifices to some divinity. The Greek and Roman altars were various in form, and often highly ornamental; in temples they were usually placed before the statue of the god. In the Jewish ceremonial the altar held an important place, and was associated with many of the most significant rites of religion. Two altars were erected in the tabernacle in the wilderness, and the same number in the temple, according to instructions given to Moses in Mt.

Sinai. These were called the altar of burnt-offering and the altar of incense. In some sections of the Christian church the communion-table, or table on which the eucharist is placed, is called an altar. In the primitive church it was a table of wood, but subsequently stone and metal were introduced with rich ornaments, sculpture, and painting. After the introduction of Gothic art the altar frequently became a lofty and most elaborate structure. Originally there was but one altar in a church, but latterly there might be several in a large church, the chief or *high altar* standing at the east end. Over an altar there is often a painting (an *altar-piece*), and behind it there may be an ornamental *altar-screen* separating the choir from the east end of the church. Lights are often placed on or near the altar—in English churches they are forbidden to be placed on it.

Altaz'imuth (abbrev. of *altitude-azimuth*), a vertical circle with a telescope so arranged as to be capable of being turned round horizontally to any point of the compass, and so differing from a *transit-circle*, which is fixed in the meridian. The altazimuth is brought to bear upon objects by

motions affecting their altitude and azimuth. Called also *Altitude-and-azimuth Instrument*.

Altdorf. See *Altorf*.

Al'tena, a town of Prussia, Westphalia, 40 miles N.N.E. of Cologne; wire-works, rolling-mills, chain-works, manufactories of needles, pins, thimbles, &c. Pop. 9387.

Al'tenburg, a town of Germany, capital of Saxe-Altenburg, 23 miles south of Leipzig. It has some fine streets and many handsome edifices, including a splendid palace; manufactures of cigars, woollen yarn,

gloves, hats, musical instruments, glass, brushes, &c. Pop. 26,241.

Alteratives (al'-), medicines, as mercury, iodine, &c., which, administered in small doses, gradually induce a change in the habit or constitution, and impercep-

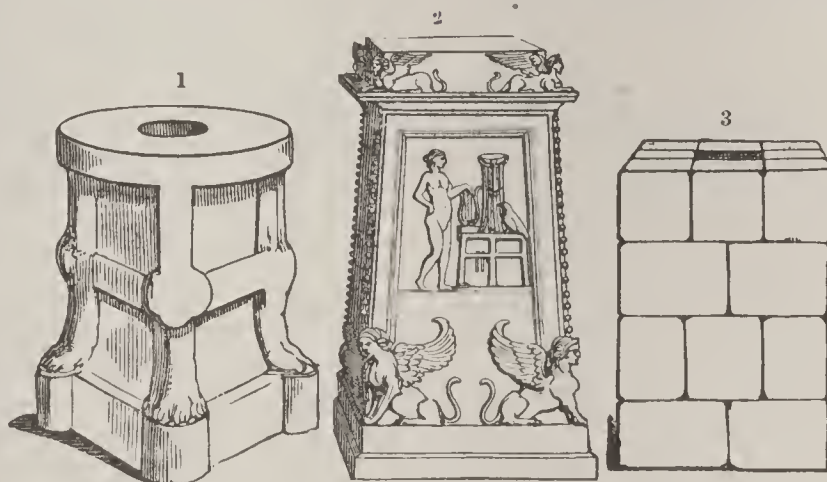
tibly alter disordered secretions and actions, and restore healthy functions without producing any sensible evacuation by perspiration, purging, or vomiting.

Alter ego (Latin, 'another I'), a second self, one who represents another in every respect. This term was formerly given, in the official style of the Kingdom of the Two Sicilies, to a substitute appointed by the king to manage the affairs of the kingdom, with full royal power.

Alter'nate, in botany, placed on opposite sides of an axis at a different level, as leaves.—*Alternate generation*, the reproduction of young not resembling their parents, but their grandparents, continuously, as in the jelly-fishes, &c. See *Generation*, *Alternate*.

Althæ'a, a genus of plants. See *Hollyhock* and *Marsh-mallow*.

Al'tiscope, an instrument consisting of an arrangement of mirrors in a vertical framework, by means of which a person is enabled to overlook an object (a parapet, for instance) intervening between himself and any view that he desires to see, the picture of the latter being reflected from a higher to a lower mirror, where it is seen by the observer.



Altars.—1, Assyrian. 2, Grecian. 3, Roman.

Al'titude, in mathematics the perpendicular height of the vertex or apex of a plane figure or solid above the base. In astronomy it is the vertical height of any point or body above the horizon. It is measured or estimated by the angle subtended between the object and the plane of the horizon, and may be either *true* or *apparent*. The *apparent* altitude is that which is obtained immediately from observation; the *true* altitude, that which results from correcting the apparent altitude, by making allowance for parallax, refraction, &c.

Altitude-and-azimuth Instrument. See *Altazimuth*.

Alto, in music, the highest singing voice of a male adult, the lowest of a boy or a woman, being in the latter the same as *contralto*. The alto, or *counter-tenor*, is not a natural voice, but a development of the *falsetto*. It is almost confined to English singers, and the only music written for it is by English composers. It is especially used in cathedral compositions and glees.

Al'ton, a town of England, in Hampshire, 16 miles north-east of Winchester, famous for its ale. Pop. 4671.

Al'ton, a town of the United States, in Illinois, on the Mississippi near the mouth of the Missouri, with a state penitentiary, several mills and manufactories, and in the neighbourhood limestone and coal. Pop. in 1890, 10,294.

Al'tona, an important commercial city in the Prussian province of Schleswig-Holstein, on the right bank of the Elbe, adjoining Hamburg, with which it virtually forms one city. It is a free port, and its commerce, both inland and foreign, is large, being quite identified with that of Hamburg. Pop. 1890, 143,249.

Altoo'na, a town of the United States, in Pennsylvania, at the eastern base of the Alleghanies, 244 miles west of Philadelphia, with large machine-shops and locomotive factories. Pop. in 1890, 30,337.

Al'torf, a small town of Switzerland, capital of the canton of Uri, beautifully situated, near the Lake of Luzern, amid gardens and orchards, and memorable as the place where, according to legend, Tell shot the apple from his son's head. A colossal statue of Tell now stands here. Pop. 2900.

Alto-rilievo (âl'tō-rē-lē-ā''vo), high relief, a term applied in regard to sculptured figures to express that they stand out boldly from the background, projecting more than half their thickness, without

being entirely detached. In *mezzo-rilievo*, or middle relief, the projection is one-half, and in *basso-rilievo*, or bas-relief, less than one-half. *Alto-rilievo* is further distin-



Alto-rilievo—Battle of Centaurs and Lapithæ.

guished from *mezzo-relievo* by some portion of the figures standing usually quite free from the surface on which they are carved, while in the latter the figures, though rounded, are not detached in any part.

Altötting (ält-eut'ing), a famous place of pilgrimage, in Bavaria, 52 miles E.N.E. of Munich, near the Inn, with an ancient image of the Madonna (the Black Virgin) in a chapel dating from 696, and containing a rich treasure in gold and precious stones; and another chapel in which Tilly was buried. Pop. 3000.

Altranstädt (ält'-rân-stet), a village of Saxony, where a treaty was concluded between Charles XII., king of Sweden, and Augustus, elector of Saxony and king of Poland, September 24, 1706, by which the latter resigned the crown of Poland.

Alt'ringham, or ALTRINCHAM, a town of England, in Cheshire, 8 miles south-west of Manchester, remarkably neat and clean, and resorted to by invalids: large quantities of fruit and vegetables are raised; and there are several industrial works. Pop. 12,424. Also a parl. div. of the county.

Al'truism, a term first employed by the French philosopher Comte, to signify devotion to others or to humanity; the opposite of *selfishness* or *egoism*.

Altwasser (ält'väs-ër), a town of Prussia, in Silesia, 35 miles south-west of Breslau; here are made porcelain, machinery, iron, yarn, mirrors, &c. Pop. 8087.

Al'um, a well-known crystalline, astringent substance with a sweetish taste, a

double sulphate of potassium and aluminium with a certain quantity of water of crystallization. It crystallizes in regular octahedrons. Its solution reddens vegetable blues. Exposed to heat its water of crystallization is driven off, and it becomes light and spongy with slightly corrosive properties, and is used as a caustic under the name of *burnt alum*. Alum is prepared in Great Britain at Whitby from alum-slate, where it forms the cliffs for miles, and at Hurlett and Campsie, near Glasgow, from bituminous alum-shale and slate-clay, obtained from old coal-pits. It is also prepared near Rome from alum-stone. Common alum is strictly *potash* alum; other two varieties are *soda* alum and *ammonia* alum, both similar in properties. The importance of alum in the arts is very great, and its annual consumption is immense. It is employed to increase the hardness of tallow, to remove greasiness from printers' cushions and blocks in calico manufactories; in dyeing it is largely used as a mordant. It is also largely used in the composition of crayons, in tannery, and in medicine (as an astringent and styptic). Wood and paper are dipped in a solution of alum to render them less combustible.

Alumbagh (*a-lam-bäg'*), a palace and connected buildings in Hindustan, about 4 miles south of Lucknow. On the outbreak of the Indian mutiny it was occupied by the revolted Sepoys, and converted into a fort. On the 23d of September, 1857, it was captured by the British, and during the following winter a British garrison, under Sir James Outram, held out here, though repeatedly attacked by overwhelming numbers of the rebels, till in March, 1858, it was finally relieved. Sir Henry Havelock was buried within the grounds.

Alu'mina (Al_2O_3), the single oxide of the metal aluminium. As found native it is called corundum, when crystallized ruby or sapphire, when amorphous emery. It is next to the diamond in hardness. In combination with silica it is one of the most widely distributed of substances, as it enters in large quantity into the composition of granite, traps, slates, schists, clays, loams, and other rocks. The porcelain clays and kaolins contain about half their weight of this earth, to which they owe their most valuable properties. It has a strong affinity for colouring matters, which causes it to be employed in the preparation of the colours called *lakes* in dyeing and calico-printing.

It combines with the acids and forms numerous salts, the most important of which are the sulphate (see *Alum*) and acetate, the latter of extensive use as a mordant.

Alumin'ium (symbol Al, atomic weight 27·0), a metal discovered in 1827, but nowhere found native, though as the base of alumina (which see) it is abundantly distributed. The mineral *cryolite*—a fluoride of aluminium and sodium—which is brought from Greenland, is one of the chief sources of aluminium. It is a shining white metal, of a colour between silver and platinum, very light, weighing less than glass, and about one-fourth of silver (specific gravity, 2·56 cast, 2·67 hammered), not liable to tarnish nor undergo oxidation in the air, very ductile and malleable, and remarkably sonorous. It forms several useful alloys with iron and copper; one of the latter (*aluminium gold*) much resembles gold, and is made into cheap trinkets. Another, known as *aluminium bronze*, possesses great hardness and tenacity. Spoons, tea and coffee pots, dish-covers, musical and mathematical instruments, &c., are made of aluminium. Within a few years the manufacture of aluminium has been revolutionized by the employment of electricity as the reducing agent. By the method of electric deposition great quantities of nearly pure metal are yielded, and its use has greatly extended. Popularly known as aluminium.

Alum-slate, **ALUM-SCHIST**, a slaty rock from which much alum is prepared; colour grayish, bluish, or iron-black; often possessed of a glossy or shining lustre; chiefly composed of clay (silicate of alumina), with variable proportions of sulphide of iron (iron-pyrites), lime, bitumen, and magnesia.

Alum-stone, a mineral of a grayish or yellowish-white colour, approaching to earthy in its composition, from which (in Italy) is obtained a very pure alum by simply subjecting it to roasting and lixiviation.

Alun'no, **NICCOLO** (real name Niccolò di Liberatore), an Italian painter of the fifteenth century, the founder of the Umbrian School; born in Foligno about 1430, died 1502.

Al'va, a town of Scotland, Stirlingshire, 7 miles north-east of Stirling, in a detached portion of the county, surrounded by Clackmannan and Perthshire; manufactures of woollen shawls, plaids, &c. Pop. 4961.

Al'va, or **AL'BA**, **FERDINAND ALVAREZ**, **DUKE OF**, Spanish statesman and general

under Charles V. and Philip II.; was born in 1508; early embraced the military career, and fought in the wars of Charles V. in France, Italy, Africa, Hungary, and Germany. He is more especially remembered for his bloody and tyrannical government of the Netherlands (1567-73), which had revolted, and which he was commissioned by Philip II. to reduce to entire subjection to Spain. Among his first proceedings was to establish the "Council of Blood," a tribunal which condemned, without discrimination, all whose opinions were suspected, and whose riches were coveted. The present and absent, the living and the dead, were subjected to trial and their property confiscated. Many merchants and mechanics emigrated to England; people by hundreds of thousands abandoned their country. The Counts of Egmont and Horn, and other men of rank, were executed, and William and Louis of Orange had to save themselves in Germany. The most oppressive taxes were imposed, and trade was brought completely to a standstill. As a reward for his services to the faith the pope presented him with a consecrated hat and sword, a distinction previously conferred only on princes. Resistance was only quelled for a time, and soon the provinces of Holland and Zealand revolted against his tyranny. A fleet which was fitted out at his command was annihilated, and he was everywhere met with insuperable courage. Hopeless of finally subduing the country he asked to be recalled, and accordingly, in December, 1573, Alva left the country, in which, as he himself boasted, he had executed 18,000 men. He was received with distinction in Madrid, but did not long enjoy his former credit. He had the honour, however, before his death (which took place in 1582) of reducing all Portugal to subjection to his sovereign. It is said of him that during sixty years of warfare he never lost a battle and was never taken by surprise.

Alvarado (âl-vâ-rä'dô), PEDRO DE, one of the Spanish 'conquistadors,' was born towards the end of the fifteenth century, and died in 1541. Having crossed the Atlantic he was associated (1519) with Cortez in his expedition to conquer Mexico; and was intrusted with important operations. In July, 1520, during the disastrous retreat from the capital after the death of Montezuma, the perilous command of the rear-guard was assigned to Alvarado. On his return to Spain he was received with honour by

Charles V., who made him governor of Guatemala, which he had himself conquered. To this was subsequently added Honduras. He continued to add to the Spanish dominions in America till his death.

Alvarez (âl-vâ-reth'), DON JOSÉ, a Spanish sculptor; born 1768, died 1827. His works are characterized by truth to nature, dignity and feeling, one of the chief representing a scene in the defence of Saragossa.

Alve'olus, one of the sockets in which the teeth of mammals are fixed. Hence *alveolar arches*, the parts of the jaws containing these sockets.

Alwar (al-war'), a state of north-western Hindustan, in Rajputana; area, 3024 square miles; surface generally elevated and rugged, and much of it of an arid description, though water is generally found on the plains by digging a little beneath the surface, and the means of irrigation being thus provided, the soil, though sandy, is highly productive. This semi-independent state has as its ruler a rajah with a revenue of about £200,000; military force, about 5000 infantry and 2000 cavalry. Pop. 682,926.—**ALWAR**, the capital, is situated at the base of a rocky hill crowned by a fort, 80 miles s.s.w. of Delhi, surrounded by a moat and rampart, and poorly built, but with fine surroundings; contains the rajah's palace and a few other good buildings. Pop. 49,867.

Alys'sum, a genus of cruciferous plants, several species of which are cultivated on account of their white or yellow coloured flowers; madwort.

Amad'avat (*Estrilda amandāva*), a small Indian singing bird allied to the finches and buntings; sober-coloured, often kept in cages.

Amade'us, the name of several counts of Savoy. The first was the son of Humbert I., and succeeded him in 1048, dying about 1078; others who have occupied an important place in history are the following:—

Amadeus V., 'the Great,' succeeded in 1285, gained distinguished honour in defending Rhodes against the Turks, increased his possessions by marriage and war, was made a prince of the empire, died in 1323.

—**Amadeus VIII.** succeeded his father, Amadeus VII., in 1391, and had his title raised to that of duke by the Emperor Sigismund. He was chosen regent of Piedmont; but after this elevation retired from his throne and family into a religious house. He now aspired to the papacy, and was chosen by the Council of Basel (1439), be-

coming pope under the name of Felix V., though he had never taken holy orders. He resigned in 1449, and died in 1451.

Amade'us, Duke of Aosta, second son of Victor Emanuel of Italy, and brother of the present king, was born in 1845, and was chosen by the Cortes King of Spain in 1870, Queen Isabella having had to leave the country in 1868. His position was far from comfortable, however, and perceiving that, as a member of a foreign dynasty he had little hope of becoming acceptable to all parties in the state, he abdicated in 1873 and returned to Italy.

Amade'us, LAKE, a large salt lake or salt swamp nearly in the centre of Australia.

Am'adis, a name belonging to a number of heroes in the romances of chivalry, Amadis de Gaul being the greatest among them, and represented as the progenitor of the whole. The Spanish series of Amadis romances is the oldest. It is comprised in fourteen books, of which the first four narrate the adventures of Amadis de Gaul, this portion of the series having originated about the end of the thirteenth or beginning of the fourteenth century, and the subsequent books being added by various hands. An abridged English translation of Amadis of Gaul was published by Southey in 1803.

Amadou (am'a-dö), a name of several fungi, genus *Polypörus*, of a leathery appearance, growing on trees. See *German Tinder*.

Amager (äm'a-ger), a small Danish island in the Sound, opposite Copenhagen, part of which is situated on it; rural pop. 16,000.

Amako'sa, one of the Kaffir tribes of S. Africa.

Amalasun'tha, daughter of Theodoric, king of the Ostrogoths, and after his death regent of Italy for her son. She was able but unscrupulous, and was put to death by her second husband, 534 A.D.

Amal'ekites, a Semitic race occupying the peninsula between Egypt and Palestine, named after a grandson of Esau. They were denounced by Moses for their hostility to the Israelites during their journey through the wilderness, and they seem to have been all but exterminated by Saul and David.

Amal'fi, a seaport in Southern Italy, on the Gulf of Salerno, 23 miles from Naples, the seat of a bishop; formerly a place of great commercial importance, in the middle

ages enjoying a republican constitution of its own. Here arose the *Amalfian Code* of maritime law. Pop. 7737.

Amal'gam, a name applied to the alloys of mercury with the other metals. One of them is the amalgam of mercury with tin,



The Cathedral, Amalfi.

which is used to silver looking-glasses. Mercury unites very readily with gold and silver at ordinary temperatures, and advantage is taken of this to separate them from their ores, the process being called *amalgamation*. The mercury being properly applied dissolves and combines with the precious metal and separates it from the waste matters, and is itself easily driven off by heat.

Amani'ta, a genus of fungi, one species of which *A. muscāria*, or fly-agaric, is extremely poisonous.

Ama'nus, a branch of the Taurus Mountains in Asia Minor.

Amarantha'ceæ, the amaranths, a nat. order of apetalous plants, chiefly inhabiting tropical countries, where they are often troublesome weeds. They are remarkable for the white or sometimes reddish scales of which their flowers are composed. *Amaranthus*, the typical genus, comprises *A. caudātus*, or love-lies-bleeding, a common plant in gardens, with pendulous racemes of

crimson flowers; and *A. hypochondriæus*, or princes' feather. The blossoms keep their bloom after being plucked and dried (hence the name: Gr. *a*, not, and *marainō*, to wither.)

Amarapura (*a-ma-ra-pö'ra*), a deserted city, once the capital of the Burmese Empire, on the left bank of the Irawaddy, 10 miles north-east of Ava. In 1810 it was completely destroyed by fire, in 1839 it was visited by a destructive earthquake. In 1857 the seat of government was removed to Mandalay. The population in 1800 was 175,000.

Amaryllida'ceæ, an order of monocotyledonous plants, generally bulbous, occasionally with a tall, cylindrical, woody stem (as in *Agave*); with a highly coloured flower, six stamens, and an inferior three-celled ovary; natives of Europe and most of the warmer parts of the world. The order includes the snowdrop, the snow-flake, the daffodil, the belladonna-lily (belonging to the typical genus *Amaryllis*), the so-called Guernsey-lily (probably a native of Japan), the *Brunsvigias*, the blood-flowers (*Hæmanthus*) of the Cape of Good Hope, different species of *Narcissus*, *Agave* (American aloe), &c. Many are highly prized in gardens and hothouses; the bulbs of some are strongly poisonous.

Amasia (*â-mâ-sē'á*), a town in the north of Asia Minor, on the Irmak, 60 miles from the Black Sea, surmounted by a rocky height in which is a ruined fortress; has numerous mosques, richly-endowed Mohammedan schools, and a trade in wine, silk, &c. Amasia was a residence of the ancient kings of Pontus. Pop. 25,000.

Amā'sis, king of Egypt from 569 to 526 B.C., obtained the throne by rebelling against his predecessor Apries, and is chiefly known from his friendship for the Greeks, and his wise government of the kingdom, which, under him, was in the most prosperous condition.

Amati (*â-mä'tē*), a family of Cremona who manufactured violins in the sixteenth and seventeenth centuries. Andrea (about 1540–1600) was the founder of the business, which was carried on by his sons Geronimo and Antonio, and by Niccolo the son of Geronimo. Most of the violins made by them are of comparatively small size and flat model, and the tone produced by the fourth or G string is somewhat thin and sharp. Many of Niccolo Amati's violins are, however, of a larger size and have all

the fulness and intensity of tone characteristic of those manufactured by Stradivario and Guarnerio.

Amatit'lan, a town in Central America, state of Guatemala, about 15 miles south of the city of Guatemala, a busy modern town, the inhabitants of which are actively engaged in the cochineal trade. There is a small lake of same name close to the town. Pop. 12,000.

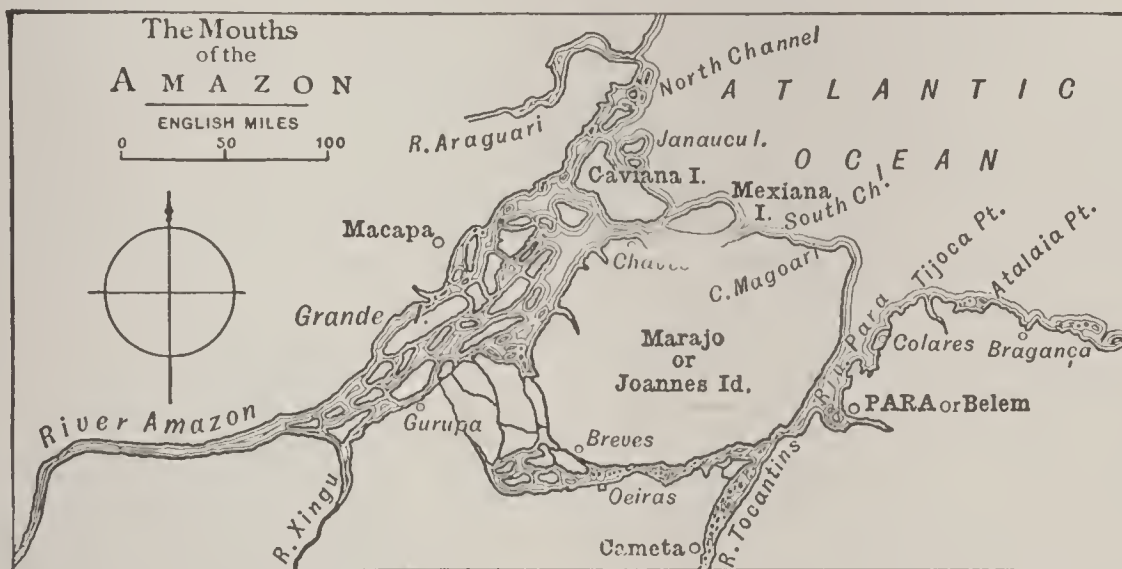
Amauro'sis (Greek *amauros*, dark), a species of blindness, formerly called *gutta-serena* (the 'drop serene,' as Milton, whose blindness was of this sort, called it), caused by disease of the nerves of vision. The most frequent causes are a long-continued direction of the eye on minute objects, long exposure to a bright light, to the fire of a forge, to snow, or irritating gases, overfulness of blood, disease of the brain, &c. If taken in time it may be cured or mitigated; but confirmed amaurosis is usually incurable.

Amaxichi (*â-mâks'ē-hē*), the chief town and seaport of Santa Maura (Leukadia), one of the Ionian Isles, the seat of a Greek bishop; manufactures cotton and leather. Pop. 5500.

Am'azon, **AM'AZONS**, a river of South America, the largest in the world, formed by a great number of sources which rise in the Andes; the two head branches being the Tunguragua or Marañon and the Ucayale, both rising in Peru, the former from Lake Lauricocha, in lat. 10° 29' s., the latter formed by the Apurimac and Urubamba, the head-waters of which are between lat. 14° and 16° s.; general course north of east; length including windings between 3000 and 4000 miles; area of drainage basin 2,300,000 sq. miles. It enters the Atlantic under the equator by a mouth 200 miles wide, divided into two principal and several smaller arms by the large island Marajo, and a number of smaller islands. In its upper course navigation is interrupted by rapids, but from its mouth upwards for a distance of 3300 miles (mostly in Brazil) there is no obstruction. It receives the waters of about 200 tributaries, 100 of which are navigable, and seventeen of these 1000 to 2300 miles in length; northern tributaries: Santiago, Morona, Pastaça, Tigre, Napo, Putumayo, Japura, Rio Negro (the Cassiquiare connects this stream with the Orinoco), &c.; southern: Huallaga, Ucayale, Javari, Jutay, Jurna, Coary, Purus, Madeira, Tapajos, Xingu, &c. At Tabatinga where it enters

Brazilian territory, the breadth is $1\frac{1}{2}$ mile; below the mouth of the Madeira it is 3 miles wide, and where there are islands often as much as 7; from the sea to the Rio Negro, 750 miles in a straight line, the depth is nowhere less than 30 fathoms; up to the junction of the Ucayale there is depth sufficient for the largest vessels. The Amazonian water system affords some 50,000 miles of river suitable for navigation. The rapidity of the river is considerable, especially during the rainy season (January to June), when it is subject to floods; but

there is no great fall in its course. The tides reach up as far as 400 miles from its mouth. The singular phenomenon of the *bore*, or as it is called on the Amazon the *pororoca*, occurs at the mouth of the river at spring-tides on a grand scale. The river swarms with alligators, turtles, and a great variety of fish. The country through which it flows is extremely fertile, and is mostly covered with immense forests; it must at some future time support a numerous population, and be the theatre of a busy commerce. Steamers and other craft ply on the river,



the chief centre of trade being Para, at its mouth. The Amazon was discovered by Yanez Pinçon in 1500, but the stream was not navigated by any European till 1540, when Francis Orellana descended it. Orellana stated that he found on its banks a nation of armed women, and this circumstance gave the name to the river.

Amaz'onas, the largest province of Brazil, traversed by the Amazon and its tributaries; area, 753,000 sq. miles; pop. 80,000.

Am'azons, according to an ancient Greek tradition, the name of a community of women, who permitted no men to reside among them, fought under the conduct of a queen, and long constituted a formidable state. They were said to burn off the right breast that it might not impede them in the use of the bow—a legend that arose from the Greeks supposing the name was from *a*, not, *mazos*, breast. It is probably from *a*, together, and *mazos*, breast, the name meaning therefore sisters. Several nations of Amazons are mentioned, the most famous being those who dwelt in Pontus, who built Ephesus and other cities. Their queen,

Hippolyta, was vanquished by Hercules. They attacked Attica in the time of Theseus. They came to the assistance of Troy under their queen, Penthesilēa, who was slain by Achilles.

Amazu'lu, a branch of the Zulu Kaffir race. See *Zulus*.

Amba'la, **UMBALL'A**, a town of India, in the Punjab, in an open plain 3 miles from the Ghaggar, consisting of an old and a new portion, with a flourishing trade in grain and other commodities. The military cantonment is several miles distant. Total pop. 67,463.

Ambale'ma, a town of S. America, Colombia, on the Magdalena; the centre of an important tobacco district. Pop. 6000.

Am'baree, a fibre similar to jute largely used in India, obtained from *Hibiscus cannabinus*.

Ambas'sador, a minister of the highest rank, employed by one prince or state at the court of another to manage the public concerns, or support the interests of his own prince or state, and representing the power and dignity of his sovereign or state. **Am-**

bassadors are *ordinary* when they reside permanently at a foreign court, or *extraordinary* when they are sent on a special occasion. When *ambassadors extraordinary* have full powers, as of concluding peace, making treaties, and the like, they are called *plenipotentiaries*. Ambassadors are often called simply *ministers*. *Envoys* are ministers employed on special occasions, and are of less dignity than ambassadors. The United States, until 1893, had never sent an agent of the diplomatic rank of ambassador. They had been represented by ministers-plenipotentiary. In that year the president was authorized to raise representatives to foreign governments to the rank of ambassador when notified that their representatives to the United States were to be likewise exalted.

Am'batch (*Hermiñiëra elaphroxylon*), a thorny leguminous shrub with yellow flowers growing in the shallows of the Upper Nile and other rivers of tropical Africa.

Amba'to, a town of Ecuador, on the side of Chimborazo, 70 miles south of Quito. Pop. 12,000.

Am'ber, a semi-mineral substance of resinous composition, a sort of fossil resin, the produce of extinct Coniferæ. It is usually of yellow or reddish-brown colour; brittle; yields easily to the knife; is translucent, and possessed of a resinous lustre. Specific gravity, 1.065. It burns with a yellow flame, emitting a pungent aromatic smoke, and leaving a light carbonaceous residue, which is employed as the basis of the finest black varnishes. By friction it becomes strongly electric. It is found in masses from the size of coarse sand to that of a man's head, and occurs in beds of bituminous wood situated upon the shores of the Baltic and Adriatic Seas; also in Poland, France, Italy, and Denmark. It is often washed up on the Prussian shores of the Baltic, and is also obtained by fishing for it with nets. Sometimes it is found on the east coast of Britain, in gravel pits round London, also in the United States.

Am'berg, a town of south Germany, in Bavaria, on the Vils, well built, with a Gothic church of the fifteenth century, royal palace, town-house, &c.; manufactures of iron-wares, stone-ware, tobacco, beer, vinegar, and arms. Pop. 15,705.

Am'bergris, a substance derived from the intestines of the sperm-whale, and found floating or on the shore; yellowish or blackish white; very light; melts at 140°, and is

entirely dissipated on red-hot coals; is soluble in ether, volatile oils, and partially in alcohol, and is chiefly composed of a peculiar fatty substance. Its odour is very agreeable, and hence it is used as a perfume.

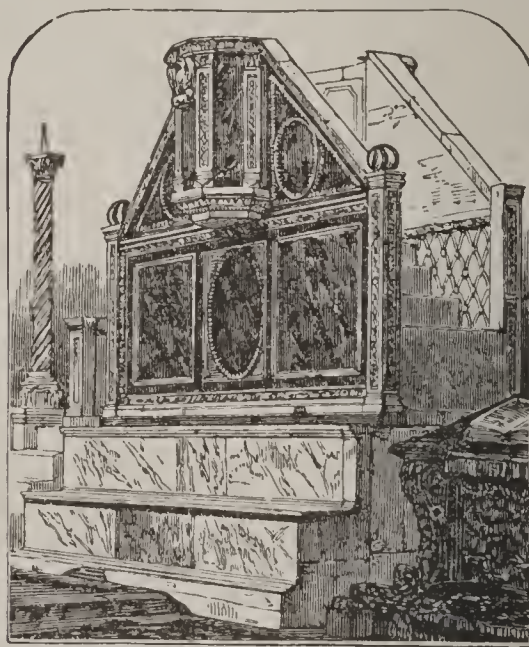
Ambidex'trous, having the faculty of using the left hand as effectively as the right.

Ambleteuse (an-bl-teuz), a small seaport of France, 6 miles from Boulogne. Here James II. landed on his flight from England in 1688; and from its harbour Napoleon I. prepared to despatch a flotilla of flat-bottomed boats for the invasion of Britain.

Amblyop'sis, a genus of blind fishes, containing only one species, *A. spelæus*, found in the Mammoth Cave of Kentucky.

Am'blyopy, dulness or obscurity of eyesight without any apparent defect in the organs; the first stage of amaurosis.

Am'bo, **AM'BON**, in early Christian churches a kind of raised desk or pulpit, sometimes



Ambo, Church of San Lorenzo, Rome.

richly ornamented, from which certain parts of the service were read, or discourses delivered, there being sometimes two in one church.

Amboina. See *Amboyna*.

Amboise (an-bwäz), a town of France, dep. Indre-et-Loire, 12 miles east of Tours, on the Loire, with an antique castle, the residence of several French kings, and manufactures of files and rasps. Pop. 4216.

Amboy'na, **AMBOINA**, or **APON**, one of the Molucca Islands in the Indian Archipelago, close to the large island of Ceram; area, about 280 square miles. Here is the seat of

government of the Dutch residency or province of Amboyna, which includes also Ceram, Booro, &c. Its surface is generally hilly or mountainous, its general aspect beautiful, and its climate on the whole salubrious, but it is not unfrequently visited by earthquakes. It affords a variety of useful trees, including the cocoa-nut and sago palms. Cloves and nutmegs are the staple productions. The soil in the valleys and along the shores is very fertile, but a large portion remains uncultivated. The natives are mostly of Malayan race. The capital, also called AMBOYNA, is situated on the Bay of Amboyna, and is well built and defended by a citadel. The streets are planted on each side with rows of fruit-trees. It is a free port. Pop. 10,500. In 1607 Amboyna and the other Moluccas were taken by the Dutch from the Portuguese, and it was for some years the seat of government of the Dutch East Indies. Trade with the Moluccas was secured to the British by treaty in 1619, but the British establishment was destroyed and several persons massacred in 1623, an outrage for which no satisfaction was obtained till 1654 by Cromwell. Amboyna was taken by the British in 1796 and 1810, but each time restored to the Dutch. Pop. 30,000.

Amboyna Wood, a beautiful curled orange or brownish coloured wood brought from the Moluccas, yielded by *Pterospermum indicum*.

Ambra'cia. See *Arta*.

Am'brose, SAINT, a celebrated father of the church; born in A.D. 333 or 334, probably at Treves, where his father was prefect; died in 397. He was educated at Rome, studied law, practised as a pleader at Milan, and in 369 was appointed governor of Liguria and Æmilia (North Italy). His kindness and wisdom gained him the esteem and love of the people, and in 374 he was unanimously called to the bishopric of Milan, though not yet baptized. For a time he refused to accept this dignity, but he had to give way, and at once ranged himself against the Arians. In his struggles against the Arian heresy he was opposed by Justina, mother of Valentinian II., and for a time by the young emperor himself, together with the courtiers and the Gothic troops. Backed by the people of Milan, however, he felt strong enough to deny the Arians the use of a single church in the city, although Justina, in her son's name, demanded that two should be given

up. He had also to carry on a war with paganism, Symmachus, the prefect of the city, an eloquent orator, having endeavoured to restore the worship of heathen deities. In 390, on account of the ruthless massacre at Thessalonica ordered by the emperor Theodosius, he refused him entrance into the church of Milan for eight months. The later years of his life were devoted to the more immediate care of his see. His writings, which are numerous, show that his theological knowledge extended little beyond an acquaintance with the works of the Greek fathers. He wrote Latin hymns, but the *Te Deum Laudamus*, which has been ascribed to him, was written a century later. He introduced the *Ambrosian Chant*, a mode of singing more monotonous than the Gregorian which superseded it. He also compiled a form of ritual known by his name.

Ambro'sia, in Greek mythology the food of the gods, as nectar was their drink

Ambrosian Chant. See *Ambrose*.

Ambrosian Library, a public library in Milan founded by the cardinal archbishop Federigo Borromeo, a relation of St. Charles Borromeo, and opened in 1609; now containing 160,000 printed books and many MSS. It was named in honour of St. Ambrose, the patron saint of Milan.

Am'bry, a niche or recess in the wall of ancient churches near the altar, fitted with a door and used for keeping the sacred utensils, &c.

Ambula'cral System, the locomotive apparatus of the Echinodermata (sea-urchins, star-fishes, &c.), the most important feature of which is the protrusible tube-feet that the animals can at will dilate with water and thus move forward.

Am'bulance, a hospital establishment which accompanies an army in its movements in the field for the purpose of providing assistance and surgical treatment to the soldiers wounded in battle. The name is often given to one of the carts, wagons, or litters used to transfer the wounded from the spot where they fell to the hospital. One form of ambulance wagon is a strong but light vehicle with an upright frame, from which two stretchers are slung from the top for the accommodation of those most severely wounded; seats before and behind are provided for those suffering from less serious wounds. The hospital chests, containing surgical instruments, bandages, splints, &c., are placed in the bottom of the

wagon or lashed to its under surfaces. A thorough ambulance system in connection with armies in the field is quite of recent introduction. A training in ambulance work is now being recognized as of importance beyond the field of military affairs, and as being of the utmost service wherever serious accidents are likely to happen, as, for instance, in connection with large industrial establishments.

Amelan'chier (-kē-ēr), a genus of small trees natives of Europe and N. America, allied to the medlar. *A. vulgāris*, long cultivated in English gardens, has showy white flowers; *A. Botryāpium* (grape-pear) and *A. ovālis*, American species, yield pleasant fruits.

Ameland (ä'me-lānt), an island off the north coast of Holland, 13 miles long and 3 broad; flat; inhabitants (about 2000 in number) chiefly engaged in fishing and agriculture.

Amélie-les-Bains (ä-mā-lē-lā-bā), a village of France, dep. Pyrénées-Orientales, frequented as a winter residence for invalids, and for its warm sulphureous springs.

Amen (ā-men'), a Hebrew word, signifying 'verily,' 'truly,' transferred from the religious language of the Jews to that of the Christians, and used at the end of prayers as equivalent to 'so be it,' 'may this be granted.'

Amend'ment, a proposal brought forward in a meeting of some public or other body, either in order to get an alteration introduced on some proposal already before the meeting, or entirely to overturn such proposal. When amendments are made in either House of Congress upon a bill which passed the other, the bill, as amended, must be sent back to the other House. The Senate may amend money bills passed by the House of Representatives, but cannot originate such bills. Art. V. of the Constitution of the United States contains a provision for its amendment.

Ameno'phis (or AMENHOTEP) III., a king of ancient Egypt about 1500 B.C.; warred successfully against Syrians and Ethiopians, built magnificent temples and palaces at Thebes, where the so-called Memnon statue is a statue of this king.

Amenorrhœ'a, absence or suspension of menstruation. The former may arise from general debility or from defective development, the latter from exposure to cold, from attacks of fever or other ailment, violent excitement, &c.

Amenta'ceæ, an order of plants having

their flowers arranged in amenta or catkins; now broken up into several orders, the chief of which are Betulaceæ (the birch), Salicineæ (the willow), Balsamifluæ (the liquidambar), Platanæ (the plane), and Cupuliferæ (the nut).

Amen'tia, imbecility from birth, especially when extreme; idiocy.

Amen'tum, in botany, that kind of inflorescence which is commonly known as a catkin (as in the birch or willow), consisting of unisexual apetalous flowers in the axil of scales or bracts.



Amentum.

Willow (*Salix fragilis*), male and female, with separate flowers.

Amer'ica, or the NEW WORLD, the largest of the great divisions of the globe except Asia, is washed on the west by the Pacific, on the east by the Atlantic, on the north by the Arctic Ocean, on the south tapers to a point. On the north-west it approaches within about 50 miles of Asia, while on the north-east the island of Greenland approaches within 370 miles of the European island Iceland; but in the south the distance between the American mainland and Europe or Africa is very great. Extreme points of the continent — north, Boothia Felix, at the Strait of Bellot, lat. 72° N.; south, Cape Horn, lat. 56° S.; west, Cape Prince of Wales, lon. 168° W.; east, Point de Guia, lon. 35° W. America as a whole forms the two triangular continents of North and South America, united by the narrow Isthmus of Panama, and having an entire length of about 10,000 miles; a maximum breadth (in North America) of 3500 miles; a coast line of 44,000 miles; and a total area, including the islands, of nearly 16,000,000, of which N. America contains about 9,000,000 sq. miles. South America is more compact in form than N. America, in this respect resembling Africa, while N. America more resembles Europe. Between the two on the east side is the great basin which comprises the Gulf of Mexico, the Caribbean Sea, and the West India Islands. Like Europe also N. America possesses numerous islands, while those of S. America are less important and confined almost to the southern extremity.

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Three-fourths of the area of America is comparatively flat, and this portion of the surface is bounded on the west by lofty mountain systems which stretch continuously from north to south between the extremities of the continent, generally at no great distance from the west shore. In North America the Rocky Mountains, a broad series of masses partly consisting of plateaux, form the most important portion of the elevated surface, being continued southward in the mountains and table-land of Mexico and the ranges of Central America. Separated by depressions from the Rocky Mountains proper, and running close to and parallel with the western coast, are several lofty ranges (Sierra Nevada, Cascade Mountains, &c.). Near the eastern coast, and forming an isolated mass, are the Appalachians, a system of much inferior magnitude. The loftiest mountains in N. America are Wrangell (Alaska), 20,090 ft.; Mount St. Elias, 19,500; and Popocatepetl, 17,783 ft.—all volcanoes. The depression of the Isthmus of Panama (about 260 feet) forms a natural separation between the systems of the north and the south. In S. America the Andes form a system of greater elevation but less breadth than the Rocky Mountains, and consist of a series of ranges (*cordilleras*) closely following the line of the west coast from the Isthmus of Panama to Cape Horn. The highest summits seem to be Aconcagua (22,860 ft.), Sorata or Illampu (21,484), and Sahama (21,054). Volcanoes are numerous. Isolated mountain groups of minor importance are the highlands of Venezuela and of Brazil, the latter near the eastern coast, reaching a height of 10,000 feet.

The fertile lowlands which lie to the east of the Rocky Mountains and the Andes form a depression extending through both continents from the northern to the southern oceans. They have somewhat different features and different names in different portions; in N. America are *prairies* and *savannahs*, in S. America *llanos*, *selvas*, and *pampas*.

Through these low grounds flow the numerous great rivers which form so characteristic a feature of America. The principal are the Mackenzie, Coppermine, and Great Fish rivers, entering the Northern Ocean; the Churchill, Nelson, Severn, and Albany, entering Hudson's Bay; the St. Lawrence, entering the Atlantic; Mississippi and Rio del Norte, entering the Gulf of Mexico (all these being in N. America); the Mag-

dalena, Orinoco, Amazon, Paranaíba, Rio de la Plata, Colorado, and Rio Negro, entering the Atlantic (all in S. America); and the Yukon, Fraser, Colombia, San Joaquin, Sacramento, and Colorado, entering the Pacific. The rivers which flow into the Pacific, however, owing to the fact that the great backbone of the continent, the Rocky Mountains and the Andes, lies so near the west coast, are of comparatively little importance, in S. America being all quite small. Sometimes rivers traversing the same plains, and nearly on the same levels, open communications with each other, a remarkable instance being the Cassiquiare in S. America, which, branching off from the Rio Negro and joining the Orinoco, forms a kind of natural canal, uniting the basins of the Orinoco and the Amazon. The Amazon or Marañon in S. America, the largest river in the world, has a course of about 3500 miles, and a basin of 2,300,000 square miles; the Mississippi-Missouri, the largest river of North America, runs a longer course than the Amazon, but the area of its basin is not nearly so great. North America has the most extensive group of lakes in the world—Lakes Superior, Michigan, Huron, Erie, and Ontario, which through the St. Lawrence send their drainage to the Atlantic. Thus by means of lakes and rivers the interior of both N. and S. America is opened up and made accessible.

In regard to climate N. America naturally differs very much from S. America, and has more resemblance to the continents of Europe and Asia (regarded as a whole). In N. America, as in the older continent, the eastern parts are colder than the western, and hence the towns on the Atlantic coast have a winter temperature about 10° lower than those in corresponding latitudes of Europe. The winter temperature of the greater part of N. America is indeed severe, though the intense cold is less felt on account of the dryness of the air. There is no regular season of rainfall unless in the south. Although two-thirds of S. America lies within the tropics the heat is not so great as might be expected, owing to the prevailing winds, the influences of the Andes, and other causes. The highest temperature experienced is probably not more than 100° in the shade; at Rio de Janeiro the mean is about 74°, at Lima 72°. Over great part of S. America there is a wet and a dry season, varying in different regions; on the upper Amazon the rains

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last for ten months, being caused by the prevailing easterly winds bringing moisture from the Atlantic, which is condensed on the eastern slopes of the Andes. In each of the Americas there is a region in which little or no rain falls; in N. America it extends over a part of the United States and Northern Mexico, in S. America over a part of the coast region of Peru and Chile.

America is rich in valuable minerals. It has supplied the world with immense quantities of gold and silver, which it still yields in no small amount, especially in the United States. It possesses inexhaustible stores of coal (U. States), with iron, copper, lead, tin, mercury, &c. Petroleum may be called one of its specialities, its petroleum wells having caused whole towns to spring into existence. Diamonds and other precious stones are found.

As regards vegetation America may be called a region of forests and verdure, vast tracts being covered by the grassy prairies, llanos, and pampas where the forests fail. In N. America the forests have been largely made use of by man; in S. America vast areas are covered with forests, which as yet are traversed only by the uncivilized Indian. In the north is the region of pines and firs; further south come the deciduous trees, as the oak, beech, maple, elm, chestnut, &c. Then follow the evergreen forests of the tropical regions. The useful timber trees are very numerous; among the most characteristic of America are mahogany and other ornamental woods, and various dyewoods. In the tropical parts are numerous palms, cacti in great variety, and various species of the agave or American aloe. In the virgin forests of S. America the trees are often bound together into an impenetrable mass of vegetation by various kinds of climbing and twining plants. Among useful plants belonging to the American continent are maize, the potato, cacao, tobacco, cinchona, vanilla, Paraguay tea, &c. The most important plants introduced are wheat, rice, and other grains, sugar-cane, coffee, and cotton, with various fruits and vegetables. The vine is native to the continent, and both the American and introduced varieties are now largely cultivated.

The animals of America include, among carnivora, the jaguar or American tiger, found only in S. America; the puma or American lion, found mostly in S. America; the grizzly bear of N. America, fully

as powerful an animal as either; the black bear, the skunk, the racoon, the American or prairie wolf, several species of foxes, &c. The rodents are represented by the beaver, the porcupine, and squirrels of several species; the marsupials by the opossum. Among ruminants are the bison, or, as it is commonly called, the buffalo, the moose or elk, the Virginian stag, the musk-ox; and in S. America the llama (which takes the place of the camel of the Old World), the alpaca, and the vicuña. Other animals most distinctive of S. America are sloths, fitted to live only in its dense and boundless forests; ant-eaters and armadillos; monkeys with prehensile tails, in this and other respects differing from those of the Old World; the condor among the heights of the Andes, the nandu, rhea or three-toed ostrich, beautiful parrots and humming-birds. Among American reptiles are the boa-constrictor, the rattlesnake, the alligator or cayman, the iguana and other large lizards, large frogs and toads. The domestic animals of America, horses, cattle, and sheep, are of foreign origin. The electrical eel exists in the tropical waters.

The population of America consists partly of an aboriginal race or races, partly of immigrants or their descendants. The aboriginal inhabitants are the American Indians or red men, being generally of a brownish-red colour, and now forming a very small portion of the total population, especially in N. America, where the white population has almost exterminated them. These people are divided into branches, some of which have displayed a considerable aptitude for civilization. When the Europeans became acquainted with the New World, Mexico, Central and part of S. America were inhabited by populations which had made great advances in many things that pertain to civilized life, dwelling in large and well-built cities under a settled form of government, and practising agriculture and the mechanical arts. Ever since the discovery of America at the close of the fifteenth century Europeans of all nations have crowded into it; and the comparatively feeble native races have rapidly diminished, or lost their distinctive features by intermixtures with whites, and also with negroes brought from Africa to work as slaves. These mixed races are distinguished by a variety of names, as Mestizos, Mulattoes, Zambos, &c. In North America the white population is mainly of Brit-

ish origin, though to a considerable extent it also consists of Germans, Scandinavians, &c., and the descendants of such. In Central and South America the prevailing white nationality is the Spanish and Portuguese. In the extreme north are the Eskimos—a scattered and stunted race closely allied to some of the peoples of Northern Asia. That the aboriginal inhabitants of America passed over from Asia is tolerably certain, but when and from what part we do not know. The total population of the New World was estimated in 1890 at 110,000,000, of which perhaps 72,000,000 were whites, 16,000,000 mixed races, 12,000,000 negroes, and 10,000,000 Indians. As regards religion the bulk of the population of N. America is Protestant; of Central and S. America the religion is almost exclusively Roman Catholic. Several millions of the Indians are heathens.—The independent states of America are all republican in form of government. Brazil also, in 1889, by a peaceful revolution, adopted this form of government. See *N., S. and Central America*.

The merit of first unlocking the American continent to modern Europe belongs to the Genoese navigator Christopher Columbus, who discovered, in October, 1492, one of the Bahamas, and named it San Salvador. Europeans, however, had on different former occasions discovered the American coasts, and the coasts of Massachusetts and Rhode Island were visited by Northmen and named Vinland, in the year 1000. Still these discoveries had no influence on the enterprise of Columbus, and cannot detract in the least from his merit; they were forgotten, and had never been made known to the inhabitants of the rest of Europe. Though Columbus was the first of his time who set foot on the New World, it has taken its name not from him, but from Amerigo Vespucci. The mainland was first seen in 1497 by Sebastian Cabot, who sailed under the patronage of Henry \ II. of England. For further particulars of discovery see *North America* and *South America*.

The known history of America hardly goes beyond the period of its discovery by Columbus; but it possesses many monuments of antiquity that might take us many centuries backward, could we learn anything of their origin or of those by whom they were produced. Among such antiquities are great earthworks in the form of mounds, or of raised inclosures, crowning the tops of hills, river peninsulas,

&c., and no doubt serving for defence. They inclose considerable areas, are surrounded by an exterior ditch, and by ramparts which are composed of mingled earth and stones, and are often of great extent in proportion to the area inclosed. They are always supplied either naturally or artificially with water, and give other indications of having been provided for a siege. Barrows and tumuli containing human bones, and which bear indications of having been used both as places of sepulture and as temples, are also numerous. They are in geometrical forms—circles, squares, parallelograms, &c. A mound on the plain of Cahokia in Illinois, opposite the city of St. Louis, is 700 feet long, 500 feet broad, and 90 feet high. Another class of earth mounds represent gigantic animal forms in bas-relief on the ground. One is a man with two heads, the body 50 feet long and 25 feet broad across the breast; another represents a serpent 1000 feet in length, with graceful curves. The monuments of Mexico, Central America, and Peru are of a more advanced state of civilization, approach nearer to the historical period, and make the loss of authentic information more severely felt. Here there are numerous ruined towns with most elaborate sculptures, lofty pyramidal structures serving as temples or forts, statues, picture writing, hieroglyphics, roads, aqueducts, bridges, &c. Some remarkable prehistoric remains discovered in recent years are what are known as the abodes of the 'cliff-dwellers.' These consist of habitations constructed on terraces and in caves high up the steep sides of cañons in Colorado and other parts of the western States of N. America. Some of these buildings are several stories high. See also *Mexico*, *Peru*, &c.

American Antiquities. See *America*.

American Indians. See *Indians*.

Americanism, a term, phrase, or idiom peculiar to the English language as spoken in America, and not forming part of the language as spoken in England. The following is a list of a few of the more noteworthy Americanisms, some of them being rather slangy or vulgar.

Approbate, to approve.

Around or round, about or near. To *hang around* is to loiter about a place.

Backwoods, the partially cleared forest regions in the western states.

Bee, an assemblage of persons to unite their labours for the benefit of an individual or family, or to carry out a joint scheme.

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- Bogus*, false, counterfeit.
Boss, an employer or superintendent of labourers, a leader.
Bug, a coleopterous insect, or what in England is called a *beetle*.
Buggy, a four-wheeled vehicle.
Bulldoze, to; to intimidate voters.
Bunkum or *buncombe*, a speech made solely to please a constituency; talk for talking's sake, and in an inflated style.
Bureau, a chest of drawers; a dressing-table surmounted by a mirror.
Calculate, to suppose, to believe, to think.
Camp-meeting, a meeting held in the fields or woods for religious purposes, and where the assemblage encamp and remain several days.
Cane-brake, a thicket of canes.
Car, a carriage or wagon of a railway train. The Englishman 'travels by rail' or 'takes the train;' the American takes or goes by the *cars*.
Carpet-bagger, a needy political adventurer who carries all his earthly goods in a carpet-bag.
Caucus, a private meeting of the leading politicians of a party to agree upon the plans to be pursued in an approaching election.
Chalk: a *long chalk* means a great distance, a good deal.
Chunk, a short thick piece of wood or any other material.
Clever, good-natured, obliging.
Cocktail, a stimulating drink made of brandy or gin mixed with sugar, and a very little water.
Corn, maize; in England, wheat, or grain in general.
Corn-husking, or *corn-shucking*, an occasion on which a farmer invites his neighbours to assist him in stripping the husks from his Indian corn.
Cow-hide, a whip made of twisted strips of raw hide.
Creek, a small river or brook; not, as in England, a small arm of the sea.
Cunning, small and pretty, nice, as it was such a *cunning* baby.
Dander: to get one's *dander raised*, to have one's *dander up*, is to have been worked into a passion.
Dead-heads, people who have free admission to entertainments, or who have the use of public conveyances, or the like, free of charge.
Dépôt, a railway-station.
Down east, in or into the New England States. A *down-easter* is a New Englander.
Drummer, a bagman or commercial traveller.
Dry goods, a general term for such articles as are sold by linen-drappers, haberdashers, hosiers, &c.
Dutch, the German language. — *Dutchman*, a German.
Fix, to; to put in order, to prepare, to adjust. To fix the hair, the table, the fire, is to dress the hair, lay the table, make up the fire.
Fixings, arrangements, dress, embellishments, luggage, furniture, garnishings of any kind.
Gerrymander, to arrange political divisions so that in an election one party may obtain an advantage over its opponent, even though the latter may possess a majority of votes in the state; from the deviser of such a scheme, named *Gerry*, governor of Massachusetts.
Given name, a Christian name.
Grit, courage, spirit, mettle.
Guess, to; to believe, to suppose, to think, to fancy; also used emphatically, as 'Joe, will you liquor up?' 'I guess I will.'
Gulch, a deep abrupt ravine, caused by the action of water.
Happen in, to; to happen to come in or call.
Help, a servant.
High-falutin, inflated speech, bombast.
Hoe-cake, a cake of Indian meal baked on a hoe or before the fire.
Indian summer, the short season of pleasant weather usually occurring about the middle of November.
Johnny Cake, a cake made of Indian corn meal mixed with milk or water and sometimes a little stewed pumpkin; the term is also applied to a New Englander.
Julep, a drink composed of brandy or whisky with sugar, pounded ice, and some sprigs of mint.
Loafer, a lounge, a vagabond.
Log-rolling, the assembly of several parties of wood-cutters to help one of them in rolling their logs to the river after they are felled and trimmed; also employed in politics to signify a like system of mutual co-operation.
Lot, a piece or division of land, an allotment.
Lumber, timber sawed and split for use; as beams, joists, planks, staves, hoops, &c.
Lynch law, an irregular species of justice executed by the populace or a mob, without legal authority or trial.
Mail letters, to; to post letters.
Make tracks, to; to run away.
Mitten: to get the *mitten* is, to meet with a refusal.
Mizzle, to; to abscond, or run away.
Mush, a kind of hasty-pudding.
Muss, a state of confusion.
Notions, a term applied to every variety of small-wares.
One-horse: a one-horse thing is a thing of no value or importance, a mean and trifling thing.
Picaninny, a negro child.
Pile, a quantity of money.
Planks, in a political sense, are the several principles which appertain to a party; *platform* is the collection of such principles.
Reckon, to; to suppose, to think.
Rile, to; to irritate, to drive into a passion.
Rock, a stone of any size; a pebble; as to throw rocks at a dog.
Rooster, the common domestic cock.
Scalawag, a scamp, a scapegrace.
Shanty, a mean structure such as squatters erect; a temporary hut.
Skedaddle, to; to run away; a word introduced during the civil war.
Smart, often used in the sense of considerable, a good deal, as a *smart chance*.
Soft saucer, flattering, coaxing talk.
Span of horses, two horses as nearly as possible alike, harnessed side by side.
Spread-eagle style, a compound of exaggeration, bombast, mixed metaphor, &c.
Spry, active.
Stampedede, the sudden flight of a crowd or number.
Store, a shop, as a book-store, a grocery store.
Strike oil, to; to come upon petroleum: hence to make a lucky hit, especially financially.
Stump speech, a bombastic speech calculated to please the popular ear, such speeches in newly-settled districts being often delivered from stumps of trees.
Sun-up, sunset, sunrise.
Tall, great, fine (used by Shakspeare pretty much in the same sense); *tall talk* is extravagant talk.
Ticket: to vote the *straight ticket* is to vote for all the men or measures your party wishes.
Truck, the small produce of gardens; *truck*

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patch, a plot in which the smaller fruits and vegetables are raised.

Ugly, ill-tempered, vicious.

Vamose, to; to run off (from the Spanish *vamos*, let us go).

Wilt, to; to fade, to decay, to droop, to wither.

American Philosophical Society, Philadelphia, organized in 1744, for the promotion of useful knowledge, has had enrolled upon its list a membership without a parallel in the history of American societies. At its sesqui-centennial, held May 22, 1893, delegates from 40 American and 12 European societies were in attendance, including some of the most distinguished philosophical and scientific thinkers in the world. What this society has accomplished in the last century and a half may be found in the twenty vols. of 'Transactions,' and the 100 parts of 'Proceedings,' which form to a great extent the record of America's scientific progress.

Americus, capital of Sumter county, Ga.; has a female college, a large carriage factory, &c. Pop. 1890, 6398.

Amerigo Vespucci, (ă-mer-ē'go vesput'-chē), a maritime discoverer, after whom America has been named; born, 1451, at Florence, died, 1512, at Seville. In 1499 he coasted along the continent of America for several hundred leagues, and the publication of his narrative, while the prior discovery of Columbus was yet comparatively a secret, led to the giving of his name to the new continent.

Ames, FISHER, American statesman, born, 1758, died, 1808; studied law, and became prominent in his profession—distinguished as a political orator and essayist.

Amesbury, Mass., 38 miles north of Boston; large woollen mills and carriage factory. Pop. 1890, 9797.

Amethyst, a violet-blue or purple variety of quartz, generally occurring crystallized in hexahedral prisms or pyramids, also in rolled fragments, composed of imperfect prismatic crystals. It is wrought into various articles of jewelry. The *oriental amethyst* is a rare violet-coloured gem, a variety of alumina or corundum, of much brilliance and beauty. The name is of Greek origin, and expresses some supposed quality in the stone of preventing or curing intoxication.

Amhara (ăm-hă'ră), a district of Abyssinia, lying between the Tacazzé and the Blue Nile, but of which the limits are not well defined.

Amherst, a village in Massachusetts,

the seat of Amherst College (Congregationalist). Pop. 1890, 4512.

Amherst (am'erst), a seaport of British Burmah, 31 miles south of Moulmein, a health resort of Europeans. Pop. 3000. The district of Amherst has an area of 15,189 sq. miles; pop. 301,086. It exports rice and teak.

Amherst, JEFFERY, LORD, born 1717, died 1797; distinguished British general, who fought at Dettingen and Fontenoy, and commanded in America, where he took Louisburg, Ticonderoga, and Quebec, and restored the British prestige in Canada. He was raised to the peerage, became commander-in-chief, and ultimately field-marshal.

Amherst, WILLIAM PITT, first earl, nephew of the above; Governor-general of India, 1823; prosecuted the first Burmese war, and suppressed the Barrackpore mutiny. Born 1773, died 1857.

Amian'thus, a kind of flexible asbestos. See ASBESTOS.

Amice (am'is), an oblong piece of linen with an embroidered apparel sewed upon it; worn under the alb by priests of the R. Cath. Ch. when engaged in the service of the mass.

Amide, **Amine** (an'id, an'in), names given to a series of salts produced by the substitution of elements or radicals for the hydrogen atoms of ammonia: often used as terminations of the names of such salts. When these hydrogen atoms are replaced by *acid* radicals, the salts are called *amides*, while if the replacing radicals are *basic*, the salts are termed *amines*.

Am'idin, **Am'idine**, a peculiar substance procured from wheat and potato starch. It forms the soluble or gelatinous part of starch.

Amiens (ă-mē-an), a town of France, capital of the department of Somme, on the railway from Boulogne to Paris. It has a citadel, wide and regular streets, and several large open areas; a cathedral, one of the largest and finest Gothic buildings in Europe, founded in 1220. Having water communication with the sea by the Somme, which is navigable for small vessels, it has a large trade and numerous important manufactures, especially cottons and woollens; it was taken by the Germans in 1870. Pop. 1891, 83,654.—The *Peace of Amiens*, concluded between Great Britain, France, Spain, and the Batavian Republic, March 27, 1802, put an end for a time to the great war which had lasted since 1793.

Amirante Islands (ă-mē-rân'tā), a group

of eleven small islands in the Indian Ocean, lying south-west of the Seychelles, and forming a dependency of Mauritius.

Amlwch (am'lök), a seaport in North Wales, island of Anglesey. Pop. 3000.

Ammana'ti, BARTOLOMEO, a sculptor and architect, born at Florence in 1511, died 1589; executed the Leda at Florence, a gigantic Neptune for St. Mark's Place at Venice, a colossal Hercules at Padua, and built the celebrated Trinity Bridge at Florence.

Ammergau (äm'er-gou), a district in Upper Bavaria, having its centre in the villages of Ober and Unter Ammergau. The former village is famous on account of the Passion Play which is performed there, at intervals usually of ten years.

Ammia'nus Marcelli'nus, a Roman historian, born at Antioch in Syria about 320, died about 390. He wrote in thirty-one books (of which the first thirteen are lost) a history of the Cæsars, from Nerva to Valens, which was highly thought of by Gibbon for its fidelity.

Am'mon, an ancient Egyptian deity, one of the chief gods of the country, identified by the Greeks with their supreme god Zeus, while the Romans regarded him as the representative of Jupiter; represented as a ram, as a human being with a ram's head, or simply with the horns of a ram.



Ammon.

There was a celebrated temple of Ammon in the Oasis of Siwah in the Libyan desert.

Ammon, OASIS OF. See SIWAH.

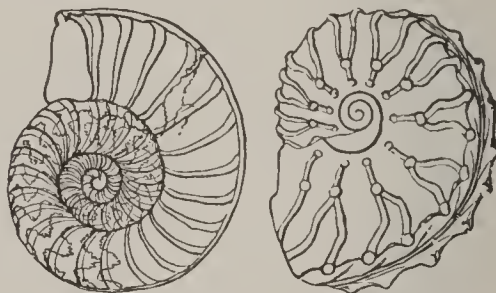
Ammo'nia, an alkaline substance, which differs from the other alkalies by being gaseous, and is hence sometimes called the *volatile alkali*. It is a colourless pungent gas, composed of nitrogen and hydrogen. It was first procured in that state by Priestley, who termed it *alkaline air*. He obtained it from sal-ammoniac by the action of lime, by which method it is yet generally prepared. It is used for many purposes, both in medicine and scientific chemistry; not, however, in the gaseous state, but frequently in solution in water, under the

names of *liquid ammonia*, *aqueous ammonia*, or *spirits of hartshorn*. It may be procured naturally from putrescent animal substances; artificially it is chiefly got from the distillation of coal and of refuse animal substances, such as bones, clippings and shavings of horn, hoof, &c. It may also be obtained from vegetable matter when nitrogen is one of its elements. Sal-ammoniac is the chloride of ammonium.

Ammoni'acum, a gum-resinous exudation from an umbelliferous plant, the *Dorēma ammoniācum*. It has a fetid smell, is inflammable, soluble in water and spirit of wine; used as an antispasmodic, stimulant, and expectorant in chronic catarrh, bronchitic affections, and asthma; also used for plasters.

Ammo'niaphone, an instrument, consisting of a metallic tube containing some substance saturated with ammonia, peroxide of hydrogen, and a few flavouring compounds, fitted with a mouthpiece to breathe through, which is said to render the voice strong, clear, rich, and ringing by the inhalation of the ammoniacal vapour. It was invented by Dr. Carter Moffat, and was suggested by the presence of ammonia in some quantity in the atmosphere of Italy—the country of fine singers.

Am'monite, a fossil Cephalopod, belonging to the genus *Ammonites*, allied to the Nautilus, having a many-chambered shell, in shape like the curved horns on the ancient



Ammonites obtusus. Ammonites varians.

statues of Jupiter Ammon; characteristic of the Trias, Lias, and Oolite formations, and sometimes found in immense numbers and of great size.

Am'monites, a Semitic race frequently mentioned in Scripture, descended from Ben-Ammi, the son of Lot (Gen. xix. 38), often spoken of in conjunction with the Moabites. A predatory and Bedouin race, they inhabited the desert country east of Gad, their chief city being Rabbath-Ammon (Philadelphia). Wars between the Israelites and the Ammonites were fre-

quent; they were overcome by Jephthah, Saul, David, Uzziah, Jotham, &c. They appear to have existed as a distinct people in the time of Justin Martyr, but have subsequently become merged in the aggregate of nameless Arab tribes.

Ammo'nium, the name given to the hypothetical base of ammonia, analogous to a metal, as potassium. It has not been isolated, but it is believed to exist in an amalgam with mercury.

Ammo'nus Sac'cas, a Greek philosopher who lived about A.D. 175–250. Originally a porter in Alexandria, he derived his epithet from the carrying of *sacks* of corn. The son of Christian parents, he abandoned their faith for the polytheistic philosophy of Greece. His teaching was historically a transition stage between Platonism and Neo-Platonism. Among his disciples were Plotinus, Longinus, Origen, &c.

Ammuni'tion, military stores generally.

Am'nesty, the releasing of a number of persons who have been guilty of political offences from the consequence of these offences. In the absence of specific statutes the exercise of amnesty in the United States is assumed to lie with the president; as the supreme court has decided in several cases.

Am'nion, the innermost membrane surrounding the fetus of mammals, birds, and reptiles.—In botany, a gelatinous fluid in which the embryo of a seed is suspended, and by which it is supposed to be nourished.

Amo'aful, village near Coomassie, West Africa, at which the Ashantees were defeated by British troops under Wolseley, 31st January, 1874.

Amœ'ba, a microscopic genus of rhizopodous Protozoa, of which *A. difflüens*, common in fresh-water ponds and ditches, is the type. It exists as a mass of protoplasm, and pushes its body out into finger-like processes or pseudopodia, and by means of these moves about or grasps particles of food. There is no distinct mouth, and food is engulfed within any portion of the soft sarcode body. Reproduction takes place by fission, or by a single pseudopodium detaching itself from



Amœba, or Fresh-water Protozoan, showing some of the shapes which it assumes, and the vacuoles in its sarcode substance.

the parent body and developing into a separate amœba.

Amœbe'an Poetry, poetry in which persons are represented as speaking alternately, as in some of Virgil's eclogues.

Amol', a town of northern Persia, 76 miles N.E. of Teheran. Extensive ruins tell of former greatness, the most prominent being the mausoleum of Seyed Quam-udeen, who died in 1378. Pop. in winter estimated at about 40,000.

Amo'mum, a genus of plants of the natural order Zingiberaceæ (ginger, &c.), natives of warm climates, and remarkable for the pungency and aromatic properties of their seeds. Some of the species yield cardamoms, others grains of paradise.

Amontilla'do, a dry kind of sherry wine of a light colour, highly esteemed.

Am'oo, or AM'OO DARIA. See *Oxus*.

Amoo-Daria, a Russian territory of Central Asia, on the east of the Amoo and south-east of the Sea of Aral; area, 40,000 sq. miles. Pop. 220,000.

Amoor', or AMUR', one of the largest rivers of Eastern Asia, formed by the junction of the rivers Shilka and Argun; flows first in a south-eastern and then in a north-eastern direction till it falls into an arm of the Sea of Okhotsk, opposite the island of Saghalien, after a course of 1500 miles. It forms, for a large portion of its course, part of the boundary-line between the Russian and the Chinese dominions, and is navigable throughout for four months in the year.—**AMOOR TERRITORY**. In 1858 Russia acquired from China the territory on the left bank of the Upper and Middle Amoor, together with that on both banks of the Lower Amoor. The western portion of the territory was organized as a separate province, with the name of the Amoor (area, 173,559 square miles; population, 58,000). The eastern portion was joined to the Maritime Province of Eastern Siberia.

A'mor, the god of love among the Romans, equivalent to the Greek *Erôs*.

Amor'go (ancient *Amorgos*), an island in the Grecian Archipelago, one of the Eastern Cyclades, 22 miles long, 5 miles broad; area, 106 square miles; has a town of the same name, with a castle, and a large harbour. Pop. 2198.

Am'orites, a powerful Canaanitish tribe at the time of the occupation of the country by the Israelites; occupied the whole of Gilead and Bashan, and formed two powerful kingdoms—a northern, under Og, who

is called king of Bashan; and a southern, under Sihon, called king of the Amorites; first attacked and overthrown by Joshua; subsequently subdued, and made tributary or driven to mingle with the Philistines and other remnants of the Canaanitish nations.

Amorphous Rocks or **Minerals**, those having no regular structure, or without crystallization, even in the minutest particles.

Amorphozo'a, a term applied to some of the lower groups of animals, as the sponges and their allies, which have no regular symmetrical structure.

Amortiza'tion, in law, the alienation of real property to corporations (that is, in *mortmain*), prohibited by several English statutes.

A'mos, one of the minor prophets; flourished under the kings Uzziah of Judah and Jeroboam II. of Israel (B.C. 810 to 784 by the common chronology). Though engaged in the occupations of a peasant he must have had a considerable amount of culture, and his book of prophecies has high literary merits. It contains denunciations of Israel and the surrounding nations, with promises of the Messiah.

Amoy', an important Chinese trading port, on a small island off the south-east coast opposite Formosa; has a safe and commodious harbour, and its merchants are among the wealthiest and most enterprising in China; one of the five ports opened to British commerce in 1843, now open to all countries. Pop. 95,600.

Ampel'idæ. See *Chatterers*.

Ampère (ân-pâr), **ANDRÉ-MARIE**, a French mathematician and founder of the science of electro-dynamics, born 1775, died 1836; professor of mathematics at the Polytechnic School and of physics at the College of France. What is known as *Ampère's Theory* is that magnetism consists in the existence of electric currents circulating round the particles of magnetic bodies, being in different directions round different particles when the bodies are unmagnetized, but all in the same direction when they are magnetized. His name has been given to a portion of the apparatus used in the electric light.

Ampère, **JEAN JACQUES JOSEPH ANTOINE**, historian and professor of French literature in the College of France; the only son of André-Marie Ampère; born at Lyons 1800, died 1864; chief works: *Histoire Littéraire de la France avant la 12^e siècle* (1839); *Introduction à l'Histoire de la Littérature*

française au moyen âge (1841); *Littérature, Voyages et Poésies* (1833); *La Grèce, Rome et Dante, Études Littéraires d'après Nature*; *l'Histoire romaine à Rome*, four vols. 8vo (1856-64).

Amphib'ia, a class of vertebrate animals, which in their early life breathe by gills or branchiæ, and afterwards *partly* or *entirely* by lungs. The Frog, breathing in its tadpole state by gills and afterwards throwing off these organs and breathing entirely by lungs in its adult state, is an example of the latter phase of amphibian existence. The Proteus of the underground caves of Central Europe exemplifies forms in which the gills of early life are retained throughout life, and in which lungs are developed in addition to the gills. A second character of this group consists in the presence of two occipital 'condyles,' or processes by means of which the skull articulates with the spine or vertebral column; Reptiles possessing one condyle only. The class is divided into four orders: the Ophiomorpha (or serpentiform), represented by the Blind-worms, in which limbs are wanting and the body is snake-like; the Urodela or 'Tailed' Amphibians, including the Newts, Proteus, Siren, &c.; the Anoura, or Tailless Amphibia, represented by the Frogs and Toads; and the Labyrinthodontia, which includes the extinct forms known as Labyrinthodons.

Amphibol'ogy, an equivocal phrase or sentence, not from the double sense of any of the words, but from its admitting a double construction, as 'The duke yet lives that Henry shall depose.'

Amphic'tyonic League (or **COUNCIL**), in ancient Greece, a confederation of tribes for the protection of religious worship, but which also discussed questions of international law, and matters affecting their political union. The most important was that of the twelve northern tribes which met alternately at Delphi and Thermopylæ. The tribes sent two deputies each, who assembled with great solemnity; composed the public dissensions, and the quarrels of individual cities, by force or persuasion; punished civil and criminal offences, and particularly transgressions of the law of nations, and violations of the temple of Delphi. Its calling on the states to punish the Phocians for plundering Delphi caused the Sacred Wars, 595-586, 448-447, 357-346 B.C.

Amphi'on, in Greek mythology, son of Zeus and Antiöpē, and husband of Niöbē; had miraculous skill in music, being taught

AMPHIOXUS — AMPHIUMA.

by Mercury, or, according to others, by Apollo. In poetic legend he is said to have availed himself of his skill when building the walls of Thebes—the stones moving and arranging themselves in proper position at the sound of his lyre.

Amphioxus. See *Lancelet*.

Amphip'oda, an order of sessile-eyed malacostracan crustaceans, with feet di-



Amphipoda.—1. Shore-jumper (*Orchestia littoralis*).
2. Portion showing the respiratory organs *a a*.

rected partly forward and partly backward. Many species are found in springs and rivulets, others in salt water. The sand-hopper and shore-jumper are examples.

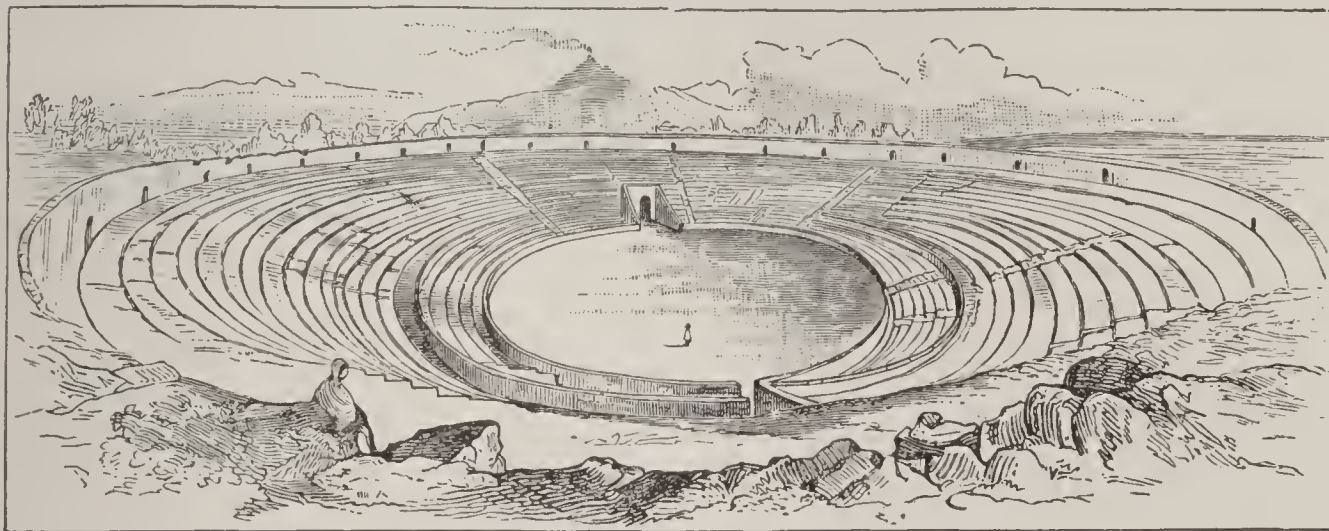
Amphip'rostyle, in architecture, said of a structure having the form of an ancient Greek or Roman oblong rectangular temple, with a prostyle or portico on each of its ends, or

fronts, but with no columns on its sides or flanks.

Amphisbæ'na (Gr., from *amphis*, both ways, and *bainō*, to go), a genus of serpentine, limbless, lacertilian reptiles; body cylindrical, destitute of scales, and divided into numerous annular segments; the tail obtuse, and scarcely to be distinguished from the head, whence the belief that it moved equally well with either end foremost. There are several species, found in tropical America. They feed on ants and earthworms, and were formerly, but erroneously deemed poisonous.

Amphis'cii (Gr. *amphi*, on both sides, and *skia*, shadow), a term sometimes applied to the inhabitants of the inter-tropical regions, whose shadows at noon in one part of the year are cast to the north and in the other to the south, according as the sun is in the southern or northern signs.

Amphithe'atre, an ancient Roman edifice of an oval form without a roof, having a central area (the *arena*) encompassed with rows of seats, rising higher as they receded from the centre, on which people used to



Amphitheatre at Pompeii.

sit to view the combats of gladiators and of wild beasts, and other sports. The Colosseum at Rome is the largest of all the ancient amphitheatres, being capable of containing from 50,000 to 80,000 persons. That at Verona is one of the best examples remaining. Its dimensions are 502 feet by 401, and 98 feet high. The name means 'both-ways theatre,' or 'theatre all round,' the theatre forming only a semicircular edifice.

Amphitri'tē, in Greek mythology, daughter of Oceanus and Tethys, or of Nereus

and Doris, and wife of Poseidon (or Neptune), represented as drawn in a chariot of shells by Tritons, with a trident in her hand.

Amphit'ryon, in Greek legend, King of Thebes, son of Alcæus, and husband of Alcmena. Plautus, and after him Molière, have made an amour of Zeus with Alcmena the subject of amusing comedies.

Amphiu'ma, a genus of amphibians which frequent the lakes and stagnant waters of North America. The adults retain the clefts at which the gills of the tadpole projected.

Am'phōra, a vessel used by the Greeks and Romans for holding liquids; commonly tall and narrow, with two handles and a pointed end which fitted into a stand or



Filling an Amphora.

was stuck in the ground to enable them to stand upright; used also as a cinerary urn, and as a liquid measure,—Gr. = 9 gallons; Rom. = 6 gallons.

Amplex'icaul, in botany, said of a leaf that embraces and nearly surrounds the stem.

Am'plitude, in astronomy, the distance of any celestial body (when referred by a secondary circle to the horizon) from the east or west points.

Ampul'la (Lat.), in antiquity, a vessel belying out like a jug, that contained unguents for the bath; also a vessel for drinking at table. The ampulla has also been employed for ceremonial purposes, such as holding the oil or chrism used in various church rites and for anointing monarchs at their coronation. The ampulla of the English sovereigns now in use is an eagle, weighing about 10 oz., of the purest chased gold, which passed through various hands to the Black Prince.

Amputa'tion, in surgery, that operation by which a member is separated from the body according to the rules of the science.

Amra'oti, a town of British India in Berár; it is celebrated for its cotton, and is a place of good trade. Pop. 23,550. The district has an area of 2767 sq. miles; pop. 546,448.

Am'ritsir, or AMRITSAR ('the pool of immortality'), a flourishing commercial town of Hindustan, capital of a district of the same name, in the Punjab, the principal place of the religious worship of the Sikhs. It has considerable manufactures of shawls and

silks; and receives its name from the sacred pond constructed by Ram Das, the apostle of the Sikhs, in which the Sikhs and other Hindus immerse themselves that they may be purified from all sin. Pop. 151,896.—The district of Arimitsir has an area of 1574 miles. Pop. 893,266.

Am'ru, originally an opponent, and subsequently a zealous supporter of Mohammed, and one of the ablest of the Mohammedan warriors. He brought Egypt under the power of the Caliph Omar in 638, and governed it wisely till his death in 636. The burning of the famous Alexandrian Library has been generally attributed to him, though only on the authority of a writer who lived six centuries later.

Am'sterdam (that is, 'the dam of the Amstel'), one of the chief commercial cities of Europe, capital of Holland (but not the residence of the king), situated at the confluence of the Amstel with the Y or Ij (pronounced as *eye*), an arm of the Zuider-zee. On account of the lowness of the site



of the city the greater part of it is built on piles. It is divided by numerous canals into about 90 islands, which are connected by nearly 300 bridges. Many of the streets have a canal in the middle with broad brick-paved quays on either side, planted with rows of trees; the houses are generally of brick, many of them six or seven stories high, with pointed gables turned to the streets. Among the public buildings are the old stadthouse, now a royal palace, the interior of which is decorated by the Dutch painters

and sculptors of the seventeenth century with their masterpieces; the justiciary hall, an imitation of a Greek temple; the town-hall (fourteenth century); the exchange; and the Palace of National Industry. Among its numerous industries may be mentioned as a speciality the cutting and polishing of diamonds. The harbour, formed by the Y, lies along the whole of the north side of the city, and is surrounded by various docks and basins. The trade is very great, being much facilitated by the great ship-canal (15 m.

long, 22-26 ft. deep, constructed 1865-76) which connects the Y directly with the North Sea. Another canal, the North Holland Canal (46 m. long, 20 ft. deep), connects Amsterdam with the Helder. Between the harbour and the Zuider-zee the Y is now crossed by a great dam in which are locks to admit vessels and regulate the amount of water in the North Sea Canal. During the seventeenth and eighteenth centuries Amsterdam was one of the wealthiest and most flourishing cities in the world. Its



Amsterdam—Scene on the Amstel.

forced alliance with France ruined its trade, but since 1813 its commerce has revived. Pop. 1892, 426,914.

Amsterdam, a town of New York state, U.S., on the Mohawk river, 33 N.W. of Albany; a busy manufacturing town. Pop. 17,336.

Amsterdam, New, or BERBICE, a town in British Guiana, between the rivers Berbice and Canje, near the sea, the seat of the government of Berbice. Pop. 8124.

Amsterdam Island, a small and almost inaccessible island in the Indian Ocean, about half-way in a direct line between the Cape of Good Hope and Tasmania.

Am'u. See *Amoo*, *Oxus*.

Amuck', **AMUK, TO RUN**, a phrase applied to natives of the Eastern Archipelago who are occasionally seen to rush out in a frantic state, making indiscriminate and murderous assaults on all that come in their way. The cause of such outbursts is not well known.

Am'ulet, a piece of stone, metal, &c., marked with certain figures or characters, which people in some countries wear about them, superstitiously deeming them a protection against diseases and enchantments.

Amur'. See *Amoor*.

Am'urath, or **MURAD**, the name of several Ottoman sultans. See *Ottoman Empire*.

Amyg'daloid (Gr. *amygdalē*, an almond), a term applied to an igneous rock, especially trap, containing round or almond-shaped vesicles or cavities partly or wholly filled with crystalline nodules of various minerals, particularly calcareous spar, quartz, agate, zeolite, chlorite, &c.

Amyg'dalus, the genus to which the almond belongs.

Am'yl, in chemistry, a hypothetical radical believed to exist in many compounds, especially the fusel-oil series, and having the formula C_5H_{11} .—*Amyl Nitrite*, or *Nitrite*

of *Amyl*, an amber-coloured fluid, smelling and tasting like essence of pears, which has been employed as an anæsthetic and also in relieving cardiac distress, as in angina pectoris.

Am'ylene (C_5H_{10}), an ethereal liquid with an aromatic odour, prepared from fusel-oil. It possesses anæsthetic properties, and has been tried as a substitute for chloroform, but is very dangerous.

Amyl'ic Alcohol, one of the products of the fermentation of grain, &c., commonly known by the name of fusel-oil (which see).

Amyrida'ceæ, a natural order of plants, consisting of tropical trees or shrubs, the leaves, bark, and fruit of which abound in fragrant resinous and balsamic juices. Myrrh, frankincense, and the gum-elemi of commerce are among their products. Among the chief genera of the order are *Amyris*, *Balsamodendron*, *Boswellia*, and *Canarium*.

A'na, the neuter plural termination of Latin adjectives in *-ānus*, often forming an affix with the names of eminent men to denote a collection of their memorable sayings—thus *Scaligeriana*, *Johnsoniana*, the sayings of Scaliger, of Johnson; or to denote a collection of anecdotes, or gossip matter, as in *boxiana*. Hence, as an independent noun, books recording such sayings; the sayings themselves.

Anabap'tists (from the Greek *anabaptiz-ein*, to rebaptize), a name given to a Christian sect by their adversaries, because, as they objected to infant baptism, they re-baptized those who joined their body. The founder of the sect appears to have been Nicolas Storch, a disciple of Luther's, who seems to have aimed also at the reorganization of society based on civil and political equality. Gathering round him a number of fiery spirits, among whom was Thomas Münzer, he incited the peasantry of Suabia and Franconia to insurrection—the doctrine of a community of goods being now added to their creed. This insurrection was quelled in 1525, when Münzer was put to the torture and beheaded. After the death of Münzer the sectaries dispersed in all directions, spreading their doctrines wherever they went. In 1534 the town of Münster in Westphalia became their centre of action. Under the leadership of Bockhold and Matthias their numbers increased daily, and being joined by the restless spirits of the adjoining towns, they soon made themselves masters of the town and expelled their adversaries. Matthias became their prophet,

but he fell in a sally against the Bishop of Münster, Count Waldeck, who had laid siege to the city. Bockhold then became leader, assuming the name of John of Leyden, king of the New Jerusalem, and Münster became a theatre of all the excesses of fanaticism, lust, and cruelty. The town was eventually taken (June, 1535), and Bockhold and a great many of his partisans suffered death. This was the last time that the movement assumed anything like political importance. In the meantime some of the apostles, who were sent out by Bockhold to extend the limits of his kingdom, had been successful in various places, and many independent teachers, who preached the same doctrines, continued active in the work of founding a new empire of pure Christians. It is true that they rejected the practice of polygamy, community of goods, and intolerance towards those of different opinions which had prevailed in Münster; but they enjoined upon their adherents the other doctrines of the early Anabaptists, and certain heretical opinions in regard to the humanity of Christ, occasioned by the controversies of that day about the sacrament. The most celebrated of those Anabaptist prophets were Melchior Hoffmann, the founder of the Hoffmannists or Millenarians; Galenus Abrahamssohn, from whom the sect of the Galenists were called; and Simon Menno, founder of various sects known as Mennonites. Menno's principles are contained in his *Principles of the True Christian Faith*, 1556, a work which is held as authoritative on points of doctrine and worship among the Baptist communities of Germany and the Netherlands at the present day. The application of the term Anabaptist to the general body of Baptists throughout the world is unwarranted, because these sects have nothing in common with the bodies which sprung up in various countries of Europe during the Reformation, except the practice of adult baptism. The Baptists themselves repudiate the name Anabaptist, as they claim to baptize according to the original institution of the rite, and never repeat baptism in the case of those who in their opinion have been so baptized.

An'abas. See CLIMBING-PERCH.

Anab'asis ('a going up'), the Greek title of Xenophon's celebrated account of the expedition of Cyrus the Younger against his brother Artaxerxes, king of Persia. The title is also given to Arrian's work which records the campaigns of Alexander the Great.

An'ableps, a genus of fishes of the perch family, found in the rivers of Guiana, consisting of but one species, remarkable for a peculiar structure of the eyes, in which there



Anableps tetraophthalmus.

is a division of the iris and cornea, by transverse ligaments forming two pupils, and making the whole eye appear double. The young are brought forth alive.

Anacanthi'ni (Gr. neg. prefix *an*, and *akantha*, a spine), an order of osseous fishes, including the cod, plaice, &c., with spineless fins, cycloid or ctenoid scales, the ventral fins either absent or below the pectorals, and ductless swim-bladder.

Anacardia'ceæ, a natural order of plants, consisting of tropical trees and shrubs which secrete an acrid resinous juice, which is often used as a varnish. Mastic, Japan lacquer, and Martaban varnish are some of their products. The cashoo or cashew (genus *Anacardium*), the pistacia, sumach, mango, &c., are members of the order.

Anach'aris, a genus of plants, nat. order Hydrocharidaceæ, the species of which grow in ponds and streams of fresh water; water-thyme or water-weed. *A. Alsinastrum* has been introduced from North America into European (including British) rivers, canals, and ponds, and by its rapid growth in dense tangled masses tends to choke them so as materially to impede navigation.

Anach'ronism, an error of chronology by which things are represented as coexisting which did not coexist; applied also to anything foreign to or out of keeping with a specified time. Thus it is an anachronism when Shakspeare, in *Troilus and Cressida*, makes Hector quote Aristotle.

Anacolu'thon, a want of grammatical and logical sequence in the structure of a sentence.

Anacon'da, the popular name of two of the largest species of the serpent tribe, viz. a Ceylonese species of the genus *Python* (*P. tigris*), said to have been met with 33 feet long; and *Eunectes murinus*, a native of tropical America, allied to the boa-constrictor, and the largest of the serpent tribe, attaining the length of 40 feet.

Anaconda, Deer Lodge county, Montana, the centre of an active mining district. Pop. 1890, about 5000.

Anac'reon, an amatory lyric Greek poet of the sixth century B.C., native of Teos, in Ionia. Only a few fragments of his works have come down to us; the collection of odes that usually passes under the name of Anacreon is mostly the production of a later time.

Anadyom'ênē (Greek, 'she who comes forth'), a name given to Aphroditē (Venus) when she was represented as rising from the sea, as in the celebrated painting by Apelles, painted for the temple of Æsculapius at Cos, and afterwards in the temple of Julius Cæsar at Rome.

Anadyr (â-nä'dēr), the most easterly of the larger rivers of Siberia and of all Asia; rises in the Stanovoi Mountains, and falls into the Gulf of Anadyr; length, 600 miles.

Anæ'mia (Greek, 'want of blood'), a medical term applied to an unhealthy condition of the body, in which there is a diminution of the red corpuscles which the blood should contain. The principal symptoms are paleness and general want of colour in the skin, languor, emaciation, want of appetite, fainting, palpitation, &c.

Anæsthe'sia, **Anæsthe'sis**, a state of insensibility to pain, produced by inhaling chloroform, or by the application of other anæsthetic agents.

Anæsthetic's, medical agents employed for the removal of pain, especially in surgical operations, by suspending sensibility either locally or generally. Various agents have been employed for both of these purposes from the earliest times, but the scientific use of anæsthetics may be said to date from 1800, when Sir Humphry Davy made experiments on the anæsthetic properties of nitrous oxide, and recommended its use in surgery. In 1818 Faraday established the anæsthetic properties of sulphuric ether, but this agent made no advance beyond the region of experiment, till 1844, when Dr. Wells, a dentist of Hartford, Connecticut, applied the inhalation of sulphuric ether in the extraction of teeth, but owing to some misadventure did not persevere with it. The example was followed in 1846 by Dr. Morton, a Boston dentist, who also extended the use of ether to other surgical operations. The practice was soon after introduced into England by Mr. Liston, and a London dentist, Mr. Robinson. A few weeks later Sir James Simpson made the first application of ether in a case of midwifery. This was early in 1847. Towards the end of the same year Simpson had his attention called

to the anæsthetic efficacy of chloroform, and announced it as a superior agent to ether. This agent has since been the most extensively used anæsthetic, though the use of ether still largely prevails in the United States. In their general effects ether and chloroform are very similar; but the latter tends to enfeeble the action of the heart more readily than the former. For this reason great caution has to be used in administering chloroform where there is weak heart action from disease. Local anæsthesia is produced by isolating the part of the body to be operated upon, and producing insensibility of the nerves in that locality. Dr. Richardson's method is to apply the spray of ether, which, by its rapid evaporation, chills and freezes the tissues and produces complete anæsthesia. This mode of treatment, besides its use in minor surgical operations, has recently begun to have important remedial applications. A valuable local anæsthetic now employed is cocaine. See *Coca*.

Anagal'lis, the Pimpernel genus of plants. See *Pimpernel*.

Anagni (â-nân'yē), a town of Italy, province of Rome; the seat of a bishopric erected in 487. Pop. 8220.

An'agram, the transposition of the letters of a word or words so as to form a new word or phrase, a connection in meaning being frequently preserved; thus, *evil, vile*; *Horatio Nelson, Honor est a Nilo* (honour is from the Nile).

Anahuac (â-nâ-wâk'; Mexican, 'near the water'), an old Mexican name applied to the plateau of the city of Mexico, from the lakes situated there, generally elevated from 6000 to 9000 feet above the sea.

An'akim, the posterity of Anak, the son of Arba, noted in sacred history for their fierceness and loftiness of stature. Their stronghold was Kirjath-arba or Hebron, which was taken and destroyed by Caleb and the tribe of Judah.

Anakolu'thon. See *Anacoluthon*.

Analep'tic, a restorative or invigorating medicine or diet.

An'alogue, in comparative anatomy an organ in one species or group having the same function as an organ of different structure in another species or group, as the wing of a bird and that of an insect, both serving for flight. Organs in different animals having a similar anatomical structure, development, and relative position, independent of function or form, such as the arm of a man and the wing of a bird, are termed *homologues*.

Anal'ogy is the mode of reasoning from resemblance to resemblance. When we find on attentive examination resemblances in objects apparently diverse, and in which at first no such resemblances were discovered, a presumption arises that other resemblances may be found by further examination in these or other objects likewise apparently diverse. It is on the belief in a unity in nature that all inferences from analogy rest. The general inference from analogy is always perfectly valid. Wherever there is resemblance, similarity or identity of cause somewhere may be justly inferred; but to infer the particular cause without particular proof is always to reason falsely. Analogy is of great use and constant application in science, in philosophy, and in the common business of life.

Anal'ysis, the resolution of an object whether of the senses or the intellect, into its component elements. In philosophy it is the mode of resolving a compound idea into its simple parts, in order to consider them more distinctly, and arrive at a more precise knowledge of the whole. It is opposed to *synthesis*, by which we combine and class our perceptions, and contrive expressions for our thoughts, so as to represent their several divisions, classes, and relations.

Analysis, in mathematics, is, in the widest sense, the expression and development of the functions of quantities by calculation; in a narrower sense the resolving of problems by algebraic equations. The analysis of the ancients was exhibited only in geometry, and made use only of geometrical assistance, whereby it is distinguished from the analysis of the moderns, which extends to all measurable objects, and expresses in equations the mutual dependence of magnitudes. Analysis is divided into lower and higher, the lower comprising, besides arithmetic and algebra, the doctrines of functions, of series, combinations, logarithms, and curves, the higher comprising the differential and integral calculus, and the calculus of variations.

In chemistry, analysis is the process of decomposing a compound substance with a view to determine either (*a*) what elements it contains (*qualitative analysis*), or (*b*) how much of each element is present (*quantitative analysis*). Thus by the first process we learn that water is a compound of hydrogen and oxygen, and by the second that it consists of one part of hydrogen by weight to eight parts of oxygen.

Anam', a country of Asia occupying the E. side of the South-eastern or Indo-Chinese Peninsula, along the China Sea, having a length of about 850 miles, with a breadth varying from over 400 miles in the N. to 100 in the middle. It is composed of three parts: Tonquin in the N.; Cochin-China in the S.; and the territory of the Laos tribes, S.W. of Tonquin (together, area, 170,000 square miles, pop. 15,000,000, 9,000,000 being in Tonquin). The coast is considerably indented, especially at the mouths of the rivers, where it affords many commodious harbours. Tonquin is mountainous on the north, but in the east is nearly level, terminating towards the sea in an alluvial plain yielding good crops of rice, cotton, fruits, ginger, and spices, and a great variety of varnish-trees, palms, &c. The principal river is the Song-ka, which has numerous tributaries, many of them being joined together by canals, both for irrigation and commerce. Tonquin is rich in gold, silver, copper, and iron. Cochin-China is, generally speaking, unproductive, but contains many fertile spots, in which grain, leguminous plants, sugar-cane, cinnamon, &c., are produced in great abundance. Agriculture is the chief occupation, but many of the inhabitants are engaged in the spinning and weaving of cotton and silk into coarse fabrics, the preparation of varnish, iron-smelting, and the construction of ships or junks. The inhabitants are said to be the ugliest of the Mongoloid races of the peninsula, being under the middle size and less robust than the surrounding peoples. Their language is monosyllabic, and is connected with the Chinese. The religion of the majority is Buddhism, but the educated classes hold the doctrines of Confucius. The principal towns are Hanoi, the capital of Tonquin, and Huë, the capital of Cochin-China and formerly of the whole empire. Anam was conquered by the Chinese in 214 B.C., but in 1428 A.D. it completely won its independence. The French began to interfere actively in its affairs in 1847 on the plea of protecting the native Christians. By the treaties of 1862 and 1867 they obtained the southern and most productive part of Cochin-China, subsequently known as French Cochin-China; and in 1874 they obtained large powers over Tonquin, notwithstanding the protests of the Chinese. Finally, in 1883 Tonquin was ceded to France, and next year Anam was declared a French protectorate. After a short period of hostili-

ties with China the latter recognized the French claims, and Tonquin is now directly administered by France, while Anam is entirely under French direction.

Anamor'phosis, a term denoting a drawing executed in such a manner as to present a distorted image of the object represented, but which, when viewed from a certain point, or reflected by a curved mirror or through a polyhedron, shows the object in its true proportions.

An'ānas. See *Pine-apple*.

Anapa', an important seaport and fortified town in Russian Circassia, on the Black Sea, a station of the Russian navy. Pop. about 9000.

An'apæst, in prosody, a foot consisting of two short and one long syllable, or two unaccented and one accented syllable, ex.—

— — — — —
The As-syr-ian came down, &c.

An'aplasty, a surgical operation to repair superficial lesions, or solutions of continuity, by the employment of adjacent healthy structure. Artificial noses, &c., are thus made.

Anarajapoo'ra, or ANURADHAPURA, a ruined city, the ancient capital of Ceylon, built about 540 B.C., and said to have covered an area of 300 square miles, doubtless a great exaggeration. The spacious main streets seemed to have been lined by elegant structures. There are still several dagobas in tolerable preservation, but the great object of interest is the sacred Bo-tree planted over 2000 years, and probably the oldest historical tree in the world, but shattered by a storm in 1887.

An'archists, a revolutionary sect or body setting forth as the social ideal the extreme form of individual freedom, and holding that all government is injurious and immoral, that the destruction of every social form now existing must be the first step to the creation of a new world. Their recognition as an independent sect may be dated from the secession of Bakunin and his followers from the Social Democrats at the congress of the Hague in 1872, since which they have maintained an active propaganda. Their principal journals have been *La Révolte* (Paris), the *Freiheit* (New York), *Liberty*, (Boston), and the *Anarchist* (London). The congress at London in 1881 decided that all means were justifiable as against the organized forces of modern society.

Anarthrop'oda, one of the two great divisions (the Arthropoda being the other)

of the Annulosa, or ringed animals, in which there are no articulated appendages. It includes the leeches, earthworms, tube-worms, &c.

A'nas, a genus of web-footed birds, containing the true ducks.

Anasarca. See *Dropsy*.

Anasta'sius I., Emperor of the East, succeeded Zeno, A.D. 491, at the age of sixty. He was a member of the imperial life-guard, and owed his elevation to Ariadne, widow of Zeno, whom he married. He distinguished himself by suppressing the combats between men and wild beasts in the arena, abolishing the sale of offices, building the fortifications of Constantinople, &c. His support of the heretical Eutychians led to a dangerous rebellion and his anathematization by the pope. He died A.D. 518.

Anastat'ica, a genus of cruciferous plants, including the Rose of Jericho (*A. hierochuntica*). See *Rose of Jericho*.

Anastatic Printing, a mode of obtaining facsimile impressions of any printed page or engraving by transferring it to a plate of zinc, which, on being subjected to the action of an acid, is etched or eaten away with the exception of the parts covered with the ink, which parts, being thus protected from the action of the acid, are left in relief so that they can readily be printed from.

Anastomo'sis, in animals and plants, the inosculation of vessels, or the opening of one vessel into another, as an artery into another artery, or a vein into a vein. By means of anastomosis, if the course of a fluid is arrested in one vessel it can proceed along others. It is by anastomosis that circulation is re-established in amputated limbs, and in aneurism when the vessel is tied.

Anath'ema, originally a gift hung up in a temple (Greek *anatithēmi*, to lay up), and dedicated to some god, a votive offering; but it gradually came to be used for *expulsion, curse*. The Roman Catholic Church pronounces the sentence of anathema against heretics, schismatics, and all who wilfully pursue a course of conduct condemned by the church. The subject of the anathema is declared an outcast from the church, all the faithful are forbidden to associate with him, and utter destruction is denounced against him, both body and soul.

Anat'idæ, a family of swimming birds, including the Ducks, Swans, Geese, &c.

Anato'lia (from Gr. *anatolē*, the sunrise, the Orient), the modern name of Asia Minor. See *Asia Minor*.

Anat'omy, in the literal sense, means simply a cutting up, but is now generally applied both to the art of dissecting or artificially separating the different parts of an organized body (vegetable or animal) with a view to discover their situation, structure, and economy; and to the science which treats of the internal structure of organized bodies. The branch which treats of the structure of plants is called *vegetable anatomy* or *phytotomy*, and that which treats of the structure of animals *animal anatomy* or *zootomy*, a special branch of the latter being *human anatomy* or *anthropotomy*. *Comparative anatomy* is the science which compares the anatomy of different classes or species of animals, as that of man with quadrupeds, or that of quadrupeds with fishes; while *special anatomy* treats of the construction, form, and structure of parts in a single animal. The special anatomy of an animal may be studied from various standpoints: with relation to the succession of forms which it exhibits from its first stage to its adult form (*developmental* or *embryotical anatomy*), with reference to the general properties and structure of the tissues or textures (*general anatomy, histology*), with reference to the changes in structure of organs or parts produced by disease and congenital malformations (*morbid* or *pathological anatomy*); or with reference to the function, use, or purpose performed by the organs or parts (*teleological* or *physiological anatomy*). According to the parts of the body described the different divisions of human anatomy receive different names; as, *osteology*, the description of the bones; *myology*, of the muscles; *desmology*, of the ligaments and sinews; *splanchnology*, of the viscera or internal organs, in which are reckoned the lungs, stomach, and intestines, the liver, spleen, kidneys, bladder, pancreas, &c. *Angiology* describes the vessels through which the liquids in the body are conducted, including the blood-vessels, which are divided into arteries and veins, and the lymphatic vessels, some of which absorb matters from the bowels, while others are distributed through the whole body, collecting juices from the tissues and carrying them back into the blood. *Neurology* describes the system of the nerves and of the brain; *dermatology* treats of the skin — Among anatomical labours are particularly to be mentioned the making and preserving of anatomical preparations. Preparations of this sort can be preserved (1) by drying them and clearing away all muscular adhesions, &c., as is done with skeletons, the bones of which

are sometimes washed with acids to give firmness and whiteness; (2) by putting them into liquids, as alcohol, spirits of turpentine, &c., as is done with the intestines and other soft parts of the body; (3) by injection, which is used with vessels, the course and distribution of which are to be made sensible and the shape of which is to be retained; (4) by tanning and covering with a suitable varnish, as the muscles.

Among the ancient writers or authorities on human anatomy may be mentioned Hippocrates the younger (460–377 B.C.), Aristotle (384–322 B.C.), Herophilus and Erasistratus of Alexandria (fl. about 300 B.C.), Celsus (53 B.C.–37 A.D.), and Galen of Pergamus (140–200), the most celebrated of all the ancient authorities on the science. From his time till the revival of learning in Europe in the fourteenth century anatomy was checked in its progress. In 1315 Mondino, professor at Bologna, first publicly performed dissection, and published a *System of Anatomy*, which was a text-book in the schools of Italy for about 200 years. In the sixteenth century Fallopio of Padua, Eustachi of Venice, Vesalius of Brussels, Varoli of Bologna, and many others, enriched anatomy with new discoveries. In the seventeenth century Harvey discovered the circulation of the blood, Asellius discovered the manner in which the nutritious part of the food is conveyed into the circulation, while the lymphatic system was detected and described by the Dane T. Bartolin. Among the renowned anatomists of later times we can only mention Malpighi, Boerhaave, William and John Hunter, the younger Meckel, Bichat, Rosenmüller, Quain, Sir A. Cooper, Sir C. Bell, Carus, Joh. Müller, Häckel, Gegenbaur, Owen, and Huxley.

Until 1832 the law of Great Britain made very insufficient provision for enabling anatomists to obtain the necessary supply of subjects for dissection. An act of some years previously had, it is true, empowered a criminal court, when it saw fit, to give up to properly qualified persons the body of a murderer after execution for dissection. This, however, was far from supplying the deficiency, and many persons, tempted by the high prices offered for bodies by anatomists, resorted to the nefarious practice of digging up newly-buried corpses, and frequently, as in the case of the notorious Burke and Hare of Edinburgh, to murder. To remedy these evils a statute was passed in 1832, which

made provision for the wants of surgeons, students, or other duly qualified persons, by permitting, under certain regulations, the dissection of the bodies of persons who die friendless in alms-houses, hospitals, &c. For most of our large cities a provision similar to that holding in Britain has been adopted by the Legislatures of the several States. Relatives may effectually object to the anatomical examination of a body, even though the deceased had expressed a desire for it.

Anaxag'oras, an ancient Greek philosopher of the Ionic school, born at Clazomenæ, in Ionia, probably about 500 B.C. When only about twenty years of age he settled at Athens, and soon gained a high reputation, and gathered round him a circle of renowned pupils, including Pericles, Euripides, Socrates, &c. At the age of fifty he was publicly charged with impiety and condemned to death, but the sentence was commuted to perpetual banishment. He thereupon went to Lampsacus, where he died about 428. Anaxagoras belonged to the atomic school of Ionic philosophers. He held that there was an infinite number of different kinds of elementary atoms, and that these, in themselves motionless and originally existing in a state of chaos, were put in motion by an eternal, immaterial, spiritual, elementary being, *Nous* (Intelligence), from which motion the world was produced. The stars were, according to him, of earthy materials; the sun a glowing mass, about as large as the Peloponnesus; the earth was flat; the moon a dark, inhabitable body, receiving its light from the sun; the comets wandering stars.

Anaximan'der, an ancient Greek (Ionic) philosopher, was born at Miletus in 611 B.C., and died 547. The fundamental principle of his philosophy is that the source of all things is an undefined substance infinite in quantity. The firmament is composed of heat and cold, the stars of air and fire. The sun occupies the highest place in the heavens, has a circumference twenty-eight times larger than the earth, and resembles a cylinder, from which streams of fire issue. The moon is likewise a cylinder, nineteen times larger than the earth. The earth has the shape of a cylinder, and is placed in the midst of the universe, where it remains suspended. Anaximander occupied himself a great deal with mathematics and geography. To him is credited the invention of geographical maps and the first application of the

gnomon or style fixed on a horizontal plane to determine the solstices and equinoxes.

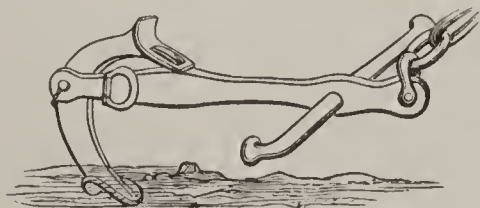
Anaximines (an-aks-im'e-nēz) of Miletus, an ancient Greek (Ionic) philosopher, according to whom air was the first principle of all things. Finite things were formed from the infinite air by compression and rarefaction produced by eternally existent motion; and heat and cold resulted from varying degrees of density of the primal element. He flourished about 550 B.C.

Anbury (an'be-ri), called also *Club-root* and *Fingers and Toes*, a disease in turnips, in which knobs or excrescences are formed on the root, which is then useless for feeding purposes. By some authorities it is said that the disease is caused by various species of insects depositing their eggs in the body of the root, while others believe that the insects are attracted by the effluvia of the diseased plant.

Ancachs (än-käch'), a dep. of Peru, between the Andes and the Pacific; area, 18,000 sq. miles; pop. 284,000.

Anchises (an-kī'sēz), the father of the Trojan hero Æneas, who carried him off on his shoulders at the burning of Troy and made him the companion of his voyage to Italy. He died during the voyage at Drepanum, in Sicily.

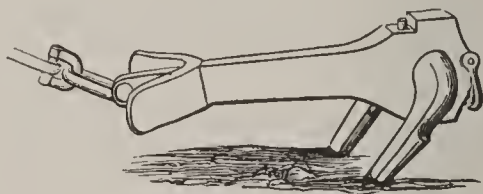
An'chor, an implement for holding a ship or other vessel at rest in the water. In ancient times large stones or crooked pieces of wood heavily weighted with metal were used for this purpose. The anchor now used is of iron, formed with a strong *shank*, at one extremity of which is the *crown*, from which branch out two *arms*, terminating in broad *palms* or *flukes*, the sharp extremity of which is the *peak* or *bill*; at the other end of the shank is the *stock* (fixed at right angles to the plane of the arms), behind



Trotman's Anchor.

which is the *ring*, to which a cable can be attached. The principal use of the stock is to cause the arms to fall so as one of the flukes shall enter the ground. The anchors of the largest size carried by men-of-war are the *best* and *small bowers*, the *sheet*, and the *spare*, to which are added the *stream* and

the *kedje*, which are used for anchoring in a stream or other sheltered place and for warping the vessel from one place to another. Many improvements and novelties in the shape and construction of anchors have been introduced within recent times. The principal names connected with those alterations



Martin's Anchor.

are those of Lieut. Rodgers, who introduced the *hollow-shanked anchor* with the view of increasing the strength without adding to the weight; Mr. Porter, who made the arms and flukes movable by pivoting them to the stock instead of fixing them immovably, causing the anchor to take a readier and firmer hold, and avoiding the chance of the cable becoming foul; Mr. Trotman, who has further improved on Porter's invention; and M. Martin, whose anchor is of very peculiar form, and is constructed so as to be self-canting, the arms revolving through an angle of 30° either way, and the sharp points of the flukes being always ready to enter the ground.

An'chorites, or AN'CHORETS (Gr. *anachorētai*, persons who have withdrawn themselves from the world), in the early church a class of religious persons who generally passed their lives in cells, from which they never removed. Their habitations were, in many instances, entirely separated from the abodes of other men, sometimes in the depth of wildernesses, in pits or caverns; at other times several of these individuals fixed their habitations in the vicinity of each other, but they always lived personally separate. The continual prevalence of bloody wars, civil commotions, and persecutions at the beginning of the Christian era must have made retirement and religious meditation agreeable to men of quiet and contemplative minds. This spirit, however, as might have been expected, soon led to fanatical excesses; many anchorites went without proper clothing, wore heavy chains, and we find at the close of the fourth century Simeon Stylites passing thirty years on the top of a column without ever descending from it, and finally dying there. In Egypt and Syria, where Christianity became blended with the Grecian

philosophy and strongly tinged with the peculiar notions of the East, the anchorites were most numerous; in Europe there were comparatively few, and on the development and establishment of the monastic system they completely disappeared.

Anchovy (an-chō'vi), a small fish of the Herring family, all the species, with exception of the common anchovy (*Engraulis encrasicolus*) and *E. meletta* (both Mediterranean species), inhabitants of the tropical seas of India and America. The common anchovy, so esteemed for its rich and peculiar flavour, is not much larger than the middle finger. It is caught in vast numbers in the Mediterranean, and frequently on the coasts of France, Holland, and the south of England, and pickled for exportation. A favourite sauce is made by pounding the pickled fish in water, simmering for a short time, adding a little cayenne pepper, and straining the whole through a hair-sieve.

Ancho'vy-pear (*Grias cauliflōra*), a tree of the natural order Myrtaceæ, a native of Jamaica, growing to the height of 50 feet, with large leaves and large white flowers, and bearing a fruit somewhat bigger than a hen's egg, which is pickled and eaten like the mango, and strongly resembles it in taste.

Anchu'sa. See *Alkanet*.

Anchylo'sis. See *Ankylosis*.

Ancillon (ān-sē-yōn), JEAN PIERRE FRÉDÉRIC, an author and statesman of French extraction, born at Berlin in 1767 (where his father was pastor of the French reformed church); died there in 1837. He became professor of history in the military academy at Berlin, and in 1806 he was charged with the education of the crown-prince. He successively occupied several important offices of state, being at last appointed minister of foreign affairs. He wrote on philosophy, history, and politics, partly in French, partly in German.

Anckarström. See *Ankarström*.

Anco'na, a seaport of Italy, capital of the province of the same name, on the Adriatic, 130 miles N.E. of Rome, with harbour works begun by Trajan, who built the ancient mole or quay. A triumphal arch of white marble, erected in honour of Trajan, stands on the mole. The harbour, once the finest on the coast, has been recently improved; Ancona is now a station of the Italian fleet, and the commerce is increasing. The town is indifferently built, but has some remark-

able edifices; among others, the cathedral. There is a colossal statue of Count Cavour. Ancona is said to have been founded about four centuries B.C., by Syracusan refugees. It fell into the hands of the Romans in the first half of the third century B.C., and became a Roman colony. Pop. 31,277. The province has an area of 740 square miles, and a population of 277,861.

Ancre (ān-kr), CONCINO CONCINI, MARSHAL AND MARQUIS D', was a native of Florence, and on the marriage of Marie de Médicis to Henri IV. in 1600 came in her suite to France, where he obtained rapid promotion, more especially after the assassination of the king (1610). He became successively Governor of Normandy, Marshal of France, and last of all, prime-minister. Being thoroughly detested by all classes, at last a conspiracy was formed against him, and he was shot dead on the bridge of the Louvre in 1617.

An'cus Mar'cius, according to the traditional history of Rome the fourth king of that city, who succeeded Tullus Hostilius, 638, and died 614 B.C. He was the son of Numa's daughter, and sought to imitate his grandfather by reviving the neglected observances of religion. He is said to have built the wooden bridge across the Tiber known as the Sublician, constructed the harbour of Ostia, and built the first Roman prison.

Ancy'ra. See *Angora*.

Andalu'sia (Sp. *Andalucia*), a large and fertile district in the south of Spain, bounded N. by Estramadura and New Castile, E. by Murcia, S. by the Mediterranean Sea, and W. by Portugal and the Atlantic; area, about 33,650 sq. miles, including the modern provinces of Seville, Huelva, Cadiz, Jaen, Cordova, Granada, Almeria, and Malaga. It is traversed throughout its whole extent by ranges of mountains, the loftiest being the Sierra Nevada, many summits of which are covered with perpetual snow (Mulahacen is 11,678 feet). Minerals abound, and several mines have been opened by English companies, especially in the province of Huelva, where the Tharsis and Rio Tinto copper-mines are situated. The principal river is the Guadalquivir. The vine, myrtle, olive, palm, banana, carob, &c., grow abundantly in the valley of the Guadalquivir. Wheat, maize, barley, and many varieties of fruit, grow almost spontaneously; besides which, honey, silk, and cochineal form important articles of culture. The horses and

mules are the best in the Peninsula; the bulls are sought for bull-fighting over all Spain; sheep are reared in vast numbers. Agriculture is in a backward state, and the manufactures are by no means extensive. The Andalusians are descended in part from the Moors, of whom they still preserve decided characteristics. Pop. 3,282,448.

An'damans, a chain of islands on the east side of the Bay of Bengal, the principal being the North, Middle, South, and Little Andamans. Middle Andaman is about 60 miles long, and 15 or 16 miles broad; North and South Andaman are each about 50 miles long. The inhabitants are about 14,500 in number, and mostly in a very savage state, living almost naked in the rudest habitations. They are small (generally much less than 5 feet), well-formed, and active, skilful archers and canoeists, and excellent swimmers and divers. These islands have been used since 1858 as a penal settlement by the Indian government, the settlement being at Port Blair, on South Andaman. Here rice, coffee, pine-apples, nutmegs, &c., are grown, while the jungle has been cleared off the neighbouring hills. The natives in the vicinity of the settlement have become to some extent civilized. The climate is moist, but the settlement is now healthy.

Andante (ân-dân'tā; It. 'at a walking pace'), in music, denotes a movement somewhat slow, graceful, distinct, and soothing. The word is also applied substantively to that part of a sonata or symphony having a movement of this character.

Andelys, **LES** (lāz änd-lēz), two towns in France called respectively Grand and Petit Andely, distant half a mile from each other, in the department of Eure, on the right bank of the Seine, 19 miles S.E. of Rouen. Grand Andely dates from the sixth century, its church is one of the finest in the department. Petit Andely owes its origin to Richard Cœur de Lion, who, in 1195, built here the Château Gaillard, in its time one of the strongest fortresses in France but now wholly a ruin. Pop. 4099.

Andenne', a town of Belgium, province of Namur, on the right bank of the Meuse and 10 miles east of Namur; manufactures delft-ware, porcelain, tobacco-pipes, paper, &c. Pop. 6278.

Andernach (ân'der-näch), a town of Rhenish Prussia, on the left bank of the Rhine, 10 miles N.W. of Coblenz, partly surrounded with walls. Pop. 5669.

An'dersen, **HANS CHRISTIAN**, a Danish novelist, poet, and writer of fairy tales, was born of poor parents at Odense, 2d April, 1805. He learned to read and write in a charity school, from which he was taken when only nine years old, and was put to work in a manufactory in order that his earnings might assist his widowed mother. In his leisure time he eagerly read national ballads, poetry, and plays, and wrote several tragedies full enough of sound and fury. In 1810 he went to Copenhagen, but failed in getting any of his plays accepted, and in securing an appointment at the theatre, having to content himself for some time with unsteady employment as a joiner. His abilities at last brought him under the notice of Councillor Collin, a man of considerable influence, who procured for him free entrance into a government school at Slagelse. From this school he was transferred to the university, and soon became favourably known by his poetic works. Through the influence of Oehlenschläger and others he received a royal grant to enable him to travel, and in 1833 he visited Italy, his impressions of which he published in *The Improvisatore* (1835) — a work which rendered his fame European. The scene of his following novel, *O. T.*, was laid in Denmark, and in *Only a Fiddler* he described his own early struggles. In 1835 appeared the first volume of his *Fairy Tales*, of which successive volumes continued to be published year by year at Christmas, and which have been the most popular and wide-spread of his works. Among his other works are *Picture-books without Pictures*, *A Poet's Bazaar* — the result of a voyage in 1840 to the East — and a number of dramas. In 1845 he received an annuity from the government. He visited England in 1848, and acquired such a command of the language that his next work, *The Two Baronesses*, was written in English. In 1853 he published an autobiography, under the title *My Life's Romance*, an English translation of which, published in 1871, contained additional chapters by the author, bringing the narrative to 1867. Among his later works we may mention, *To Be or Not To Be* (1857); *Tales from Jutland* (1859); *The Ice Maiden* (1863). He died 4th August, 1875, having had the pleasure of seeing many of his works translated into most of the European languages.

Anderson, **JAMES**, a Scottish writer on political and rural economy, born in 1739, died

in 1808. In 1790 he started the *Bee*, which ran to eighteen vols., and contains many useful papers on agricultural, economical and other topics. Among his other publications, *Recreations in Agriculture, Natural History, &c.*, contains anticipations of theories afterwards propounded by Malthus and Ricardo.

Anderson, JOHN, F.R.S., professor of natural philosophy in the University of Glasgow; born 1726, died 1796. By his will he directed that the whole of his effects should be devoted to the establishment of an educational institution in Glasgow, to be denominated *Anderson's University*, for the use of the unacademical classes. According to the design of the founder, there were to be four colleges—for arts, medicine, law, and theology—besides an initiatory school. As the funds, however, were totally inadequate to the plan, it was at first commenced with only a single course of lectures on natural philosophy and chemistry. The institution gradually enlarged its sphere of instruction, coming nearer and nearer to the original design of its founder, the medical school in particular possessing a high reputation. Latterly it has been incorporated with other institutions to form the Glasgow and West of Scotland Technical College, the medical school, however, retaining a distinct position.

Anderson, ROBERT, M.D., Scottish biographical writer, born 1750, died 1830.

Anderson, Madison county, Indiana, 178 miles east from Chicago; a manufacturing city, having a hydraulic canal with 44 feet fall. Pop. 1890, 10,741.

Andersson, CARL JAN, an African traveller, born in Sweden in 1827; died in the land of the Ovampos, in Western Africa, in July, 1867. He published *Lake Ngami, or Discoveries in South Africa* (London, 2 vols., 1856), and *The Okavango River* (London, 1861).

Andes (an'dēz), or, as they are called in Spanish South America, **CORDILLERAS** (ridges) **DE LOS ANDES**, or simply **CORDILLERAS**, a range of mountains stretching along the whole of the west coast of South America, from Cape Horn to the Isthmus of Panama and the Caribbean Sea. In absolute length (4500 miles) no single chain of mountains approaches the Andes, and only a certain number of the higher peaks of the Himalayan chain rise higher above the sea level; which peak is the highest of all is not yet settled. Several main sections of this huge

chain are distinguishable. The **Southern Andes** present a lofty main chain, with a minor chain running parallel to it on the east, reaching from Tierra del Fuego and the Straits of Magellan, northward to about lat. 28° s., and rising in Aconcagua to a height of 22,860 feet. North of this is the double chain of the **Central Andes**, inclosing the wide and lofty plateaus of Bolivia and Peru, which lie at an elevation of more than 12,000 feet above the sea. The mountain system is here at its broadest, being about 500 miles across. Here are also several very lofty peaks, as Illampu or Sorata (21,484 feet), Sabana (21,054), Illimani (21,024). Further north the outer and inner ranges draw closer together, and in Ecuador there is but a single system of elevated masses, generally described as forming two parallel chains. In this section are crowded together a number of lofty peaks, most of them volcanoes, either extinct or active. Of the latter class are Pichincha (15,918 feet), with a crater 2500 feet deep; Tunguragua (16,685 feet); Sangay (17,460 feet); and Cotopaxi (19,550 feet). The loftiest summit here appears to be Chimborazo (20,581 feet); others are Antisana (19,260 feet) and Cayambe (19,200 feet). Northward of this section the Andes break into three distinct ranges, the eastmost running north-eastward into Venezuela, the westmost running north-westward to the Isthmus of Panama. In the central range is the volcano of Tolima (17,660 feet). The western slope of the Andes is generally exceedingly steep, the eastern much less so, the mountains sinking gradually to the plains. The whole range gives evidence of volcanic action, but it consists almost entirely of sedimentary rocks. Thus mountains may be found rising to the height of over 20,000 feet, and fossiliferous to their summits (as Illimani and Sorata or Illampu). There are about thirty volcanoes in a state of activity. The loftiest of these burning mountains seems to be Gualateiri, in Peru (21,960 feet). The heights of the others vary from 13,000 to 20,000 feet. All the districts of the Andes system have suffered severely from earthquakes, towns having been either destroyed or greatly injured by these visitations. Peaks crowned with perpetual snow are seen all along the range, and glaciers are also met with, more especially from Aconcagua southwards. The passes are generally at a great height, the most important being from 10,000 to 15,000

feet. Railways have been constructed to cross the chain at a similar elevation. The Andes are extremely rich in the precious metals, gold, silver, copper, platinum, mercury, and tin all being wrought: lead and iron are also found. The llama and its congeners—the guanaco, vicuña, and alpaca are characteristic of the Andes. Among birds, the condor is the most remarkable. The vegetation necessarily varies much according to elevation, latitude, rainfall, &c., but generally is rich and varied. Except in the south and north little rain falls on the western side of the range, and in the centre there is a considerable desert area. On the east side the rainfall is heavy in the equatorial regions, but in the south is very scanty or altogether deficient. From the Andes rise two of the largest water systems of the world—the Amazon and its affluents, and the La Plata and its affluents. Besides which, in the north, from its slopes flow the Magdalena to the Caribbean Sea, and some tributaries to the Orinoco. The mountain chain pressing so close upon the Pacific Ocean, no streams of importance flow from its western slopes. The number of lakes is not great; the largest and most important is that of Titicaca on the Bolivian plateau. In the Andes are towns at a greater elevation than anywhere else in the world, the highest being the silver mining town of Cerro de Pasco (14,270 feet), the next being Potosi.

Andi'ra, a genus of leguminous American trees, with fleshy plum-like fruits. The wood is well fitted for building. The bark of *A. inermis*, or cabbage-tree, is narcotic, and is used as an anthelmintic under the name of *worm-bark* or *cabbage bark*. The powdered bark of *A. ararōba* is used as a remedy in certain skin diseases, as herpes.

Andiron (and'i-èrn), a horizontal iron bar raised on short legs, with an upright standard at one end, used to support pieces of wood when burning in an open hearth, one andiron being placed on each side of the hearth.

Andkhoo, or ANDKHOUI (änd-khö', änd-hö'i), a town of Afghanistan, about 200 miles south of Bokhara, on the commercial route to Herat. Pop. estimated at 15,000.

Andocides (an-dos'i-dēz), an Athenian orator, born in 467 B.C., died about 393 B.C. He took an active part in public affairs, and was four times exiled; the first time along with Alcibiades, for profaning the Eleusinian mysteries. Several of his orations are extant.

Andorre', or ANDOR'RA, a small nominally independent state in the Pyrenees, south of the French department of Ariège, with an area of about 230 square miles. It has been a separate state for six hundred years; is governed by its own civil and criminal codes, and has its own courts of justice, the laws being administered by two judges, one of whom is chosen by France, the other by the Bishop of Urgel, in Spain. The little state pays annually 920 francs (about £37) to France, and 460 francs to the Bishop of Urgel. The chief industry is the rearing of sheep and cattle. The commerce is largely in importing contraband goods into Spain. The inhabitants, who speak the Catalan dialect of Spanish, are simple in their manners, their wealth consisting mainly of cattle and sheep. The village of Old Andorre is the capital. Pop. estimated at from 6000 to 12,000.

An'dover, a town in England, in Hants, 12 miles north by west of Winchester, with a fine church, and a trade in corn, malt, &c. Interesting Roman remains found in the vicinity. Pop. 5871.

An'dover, a town in Massachusetts, 25 miles N.N.W. of Boston, chiefly remarkable for its literary institutions—Phillip's Academy, founded in 1778; the Andover Theological Seminary, founded in 1807, and a female academy founded in 1829. Pop. 1890, 6142.

Andrassy (än-drä'shē), Count Julius, Hungarian statesman, born 1823; took part in the revolution of 1848, was condemned to death, but escaped and went into exile; appointed premier when self-government was restored to Hungary in 1867; became imperial minister for foreign affairs in 1871, retiring from public life in 1879. Died 1890.

André (än'drā), MAJOR JOHN, adjutant-general in the British army during the American revolutionary war. Employed to negotiate the defection of the American general Arnold, and the delivery of the works at West Point, he was apprehended in disguise, September 23, 1780, within the American lines; declared a spy from the enemy, and hanged Oct. 2, 1780. His remains were brought to England in 1821 and interred in Westminster Abbey, where a monument has been erected to his memory.

Andreæ (än'dre-ā), JOHANN VALENTIN, German author, born 1586, died 1654. He was the author of numerous tracts, several of them of an amusing and satirical cha-

racter; and was long believed to be the founder of the celebrated Rosicrucian order, an opinion that received a certain support from some of his works, but in all probability the real intention of the writer was to ridicule a prevalent folly of the age.

An'dreasberg, *St.*, a mining town of the Harz Mountains, in Prussia, 57 miles S.S.E. of Hanover. Pop. 3262.

An'drew, *St.*, brother of St. Peter, and the first disciple whom Christ chose. He is said to have preached in Scythia, in Thrace and Asia Minor, and in Achaia (Greece), and according to tradition he was crucified at Patræ, now Patras, in Achaia, on a cross of the form X. Hence such a cross is now known as a St. Andrew's cross. The Russians revere him as the apostle who brought the gospel to them; the Scots, as the patron saint of their country. The day dedicated to him is the 30th of November. The Russian order of St. Andrew, the highest of the empire, was instituted by Peter the Great in 1698. For the Scottish Knights of St. Andrew or the Thistle, see *Thistle*.

An'drews, *LANCELOT*, an eminent and learned bishop of the English Church, born in London in 1555, died at Winchester 1626; was high in favour both with Queen Elizabeth and James I. In 1605 he became Bishop of Chichester, in 1609 was translated to Ely, and appointed one of the king's privy-councillors; and in 1618 he was translated to Winchester. He was one of those engaged in preparing the authorized version of the Scriptures. He left sermons, lectures, and other writings.

An'drews, *St.*, an ancient city and parliamentary burgh in Fifeshire, Scotland, 31 miles north-east from Edinburgh; was erected into a royal burgh by David I. in 1140, and after having been an episcopal, became an archiepiscopal see in 1472, and was for long the ecclesiastical capital of Scotland. The cathedral, now in ruins, was begun about 1160, and took 157 years to finish. The old castle, founded about 1200, and rebuilt in the fourteenth century, is also an almost shapeless ruin. In it James III. was born and Cardinal Beaton assassinated, and in front of it George Wishart was burned. There are several other interesting ruins. The trade and manufactures are of no importance, but the town is in favour as a watering-place. Golfing is much played here.—The UNIVERSITY OF ST. ANDREWS, the oldest of the Scotch universities, founded in 1411, consists of three

colleges, St. Salvator, St. Leonard's, and St. Mary's. Originally all three had teachers both in arts and theology; but in 1579 the colleges of St. Salvator and St. Leonard were confined to the teaching of arts and medicine, and that of St. Mary to theology. In 1747 the two former colleges were united by act of Parliament. The university embraces three distinct corporations: first, the university proper, consisting of the members of the two colleges; secondly, the united college of St. Salvator and St. Leonard, with a principal and ten professors; and thirdly, the college of St. Mary, with a principal and three professors (or four with the principal). Degrees are conferred in arts, divinity, medicine, and law, but there is a complete teaching staff only in arts and divinity. Besides the M.A. degree there is that of L.L.A. (Lady Literate in Arts). The average number of students is about 200. In connection with the university is a library containing about 100,000 printed volumes and 150 MSS. The university unites with that of Edinburgh in sending a member to Parliament. Madras College or Academy, founded by Dr. Bell of Madras, the principal secondary school of the place, provides accommodation for upwards of 1500 scholars. Pop. 6452.

An'dria, a town of South Italy, province of Bari, with a fine cathedral, founded in 1046; the church of Sant' Agostino, with a beautiful pointed Gothic portal; a college; manufactures of majolica, and a good trade. Pop. 37,192.

Andrœ'cium, in botany, the male system of a flower; the aggregate of the stamens.

Andromache (an-drom'a-kē), in Greek mythology, wife of Hector, one of the most attractive female characters of Homer's Iliad. The passage describing her parting with Hector when he was setting out to his last battle, is well known and much admired. Euripides and Racine have made her the chief character of tragedies.

Androm'ēda, in Greek mythology, daughter of the Ethiopian king Cepheus and of Cassiopeia. Cassiopeia having boasted that her daughter surpassed the Nereids, if not Hēra (Juno) herself, in beauty, the offended goddesses prevailed on their father, Poseidōn (Neptune), to afflict the country with a horrid sea-monster, which threatened universal destruction. To appease the offended god, Andromeda was chained to a rock, but was rescued by Perseus; and after death was changed into a constellation.

Androm'eda, a genus of plants belonging to the heaths. One species, *A. polifolia*, wild rosemary, a beautiful evergreen shrub, grows by the side of ponds and in swamps in the Northern States.

Androni'cus, the name of four emperors of Constantinople.—**Andronicus I.**, Comnenus, born 1110, murdered 1185.—**Andronicus II.**, Palæologus, born 1258, died 1332. His reign is celebrated for the invasion of the Turks.—**Andronicus III.**, Palæologus the Younger, born 1296, died 1341.—**Andronicus IV.**, Palæologus, reigned in the absence of John IV. In 1373 he gave way to his brother Manuel, and died a monk.

Androni'cus of Rhodes, a Peripatetic philosopher who lived at Rome in the time of Cicero. He arranged Aristotle's works in much the same form as they retain in present editions.

Androni'cus, LIVIUS, the most ancient of the Latin dramatic poets; flourished about 240 B.C.; by origin a Greek, and long a slave. A few fragments of his works have come down to us.

Androni'cus Cyrrhestes (sir-es'tēz), a Greek architect about 100 B.C., who constructed at Athens the Tower of the Winds, an octagonal building, still standing. On the top was a Triton, which indicated the direction of the wind. Each of the sides had a sort of dial, and the building formerly contained a clepsydra or water-clock.

Andropo'gon, a large genus of grasses, mostly natives of warm countries. *A. schænanthus* is the sweet-scented lemon-grass of conservatories. Others also are fragrant.

An'dros (now *Andro*), one of the islands of the Grecian Archipelago, the most northerly of the Cyclades; about 25 miles long and 6 or 7 broad; area, 100 square miles. A considerable trade is done in silk, wine, olives, figs, oranges, and lemons. Andro or Castro, the capital, has a good port. Pop. 22,562.

Andros Islands, a group of isles belonging to the Bahamas, lying south-west of New Providence, not far from the east entrance to the Gulf of Florida. The passages through them are dangerous.

Andujar (än-dö-här'), a town in Spain, in Andalusia, 50 miles E.N.E. of Cordova, on the Guadalquivir, which is here crossed by a fine bridge; manufactures a peculiar kind of porous earthen water bottles and jugs (*alcazaras*). Pop. 12,605.

An'ecdote, originally some particular rela-

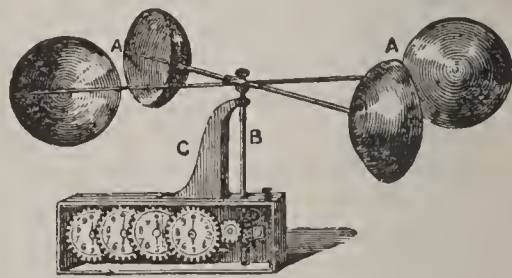
tive to a subject not noticed in previous works on that subject; now any particular or detached incident or fact of an interesting nature; a single passage of private life.

Anega'da, a British West Indian island, the most northern of the Virgin group, 10 miles long by $4\frac{1}{2}$ broad; contains numerous salt ponds, from which quantities of salt are obtained.

Anelectric, a body not easily electrified.

Anelectrode, the positive pole of a galvanic battery.

Anemom'eter (Gr. *anemos*, wind, *metron*, measure), an instrument for measuring the force and velocity of the wind. This force is usually measured by the pressure of the



Anemometer.

wind upon a square plate attached to one end of a spiral spring (with its axis horizontal), which yields more or less according to the force of the wind, and transmits its motion to a pencil which leaves a trace upon paper moved by clockwork. For indicating the velocity of the wind, the instrument which has yielded the best results consists of four hemispherical cups A attached to the ends of equal horizontal arms, forming a horizontal cross which turns freely about a vertical axis B, which is strengthened and supported at C. By means of an endless screw D carried by the axis a train of wheel-work is set in motion; and the indication is given by a hand which moves round a dial; or in some instruments by several hands moving round different dials like those of a gas-meter. It is found that the centre of each cup moves with a velocity which is almost exactly one-third of that of the wind. There are various other forms of instruments, one of which is portable, and is especially intended for measuring the velocity of currents of air passing through mines, and the ventilating spaces of hospitals and other public buildings. The direction of the wind as indicated by a vane can also be made to leave a continuous record by various contrivances; one of the most

common being a pinion carried by the shaft of a vane, and driving a rack which carries a pencil.

Anem'ōnē (Gr. *anēmos*, wind), wind-flower, a genus of plants belonging to the Buttercup family (*Ranunculaceæ*), containing many species. The wood anemone, *A. nemorōsa*, is a common and interesting little plant, and its white flowers are an ornament of many a woodland scene and mountain pasture in April and May. *A. coronaria* is a hardy plant, with large variegated flowers. *A. Hortensis*, star anemone, is one of the finest species.

Anem'one, SEA. See *Sea-anemone*.

Anemoph'ilous, said of flowers that are fertilized by the wind conveying the pollen.

Anem'oscope, any contrivance indicating the direction of the wind; generally applied to a vane which turns a spindle descending through the roof to a chamber, where, by means of a compass-card and index, the direction of the wind is shown.

Aneroid Barometer. See *Barometer*.

Ane'thum, a genus of plants; dill.

Aneu'rin, a poet and prince of the Cambrian Britons who flourished about 600 A.D., author of an epic poem, the *Gododin*, relating the defeat of the Britons of Strathclyde by the Saxons at the battle of Cattraeth.

An'eurism, **Aneurysm** (Gr. *aneurysma*, a widening), the dilatation or expansion of some part of an artery. Aneurisms arise partly from the too violent motion of the blood, and partly from degenerative changes occurring in the coats of the artery diminishing their elasticity. They are therefore more frequent in the great branches; in particular, in the vicinity of the heart, in the arch of the aorta, and in the extremities, where the arteries are exposed to frequent injuries by stretching, violent bodily exertions, thrusts, falls, and contusions. An internal aneurism may burst and cause death.

Angara', a Siberian river which flows into Lake Baikal at its N. extremity, and leaves it near the s.w. end, latterly joining the Yenisei as the Lower Angara or Upper Tunguska.

Angel (Greek *angelos*, a messenger), one of those spiritual intelligences who are regarded as dwelling in heaven and employed as the ministers or agents of God. To these the name of good angels is sometimes given, to distinguish them from bad angels, who were originally created to occupy the same blissful abode, but lost it by rebellion. Scripture frequently speaks of angels, but

with great reserve, Michael and Gabriel alone being mentioned by name in the canonical books, while Raphael is mentioned in the Apocrypha. The angels are represented in Scripture as in the most elevated state of intelligence, purity, and bliss, ever doing the will of God so perfectly that we can seek for nothing higher or better than to aim at being like them. There are indications of a diversity of rank and power among them, and something like angelic orders. They are represented as frequently taking part in communications made from heaven to earth, as directly and actively ministering to the good of believers, and shielding or delivering them from evils incident to their earthly lot. That every person has a good and a bad angel attendant on him was an early belief, and is held to some extent yet. Roman Catholics show a certain veneration or worship to angels, and beg their prayers and their kind offices; Protestants consider this unlawful.

Angel, a gold coin introduced into England in the reign of Edward IV. and coined down to the Commonwealth, so named from



Angel of Queen Elizabeth.

having the representation of the archangel Michael piercing a dragon upon it. It had different values in different reigns, varying from 6s. 8d. to 10s.

Angel-fish, a fish, *Squatina angelus*, nearly allied to the sharks, very ugly and voracious, preying on other fish. It is from 6 to 8 feet long, and takes its name from its pectoral fins, which are very large, extending horizontally like wings when spread. This fish connects the rays with the sharks, but it differs from both in having its mouth placed at the extremity of the head. It is common on the south coasts of Britain, and is also called *Monk-fish* and *Fiddle-fish*.

Angel'ical, a name of the genus *Archangelica*, tribe *Angelica*. *A. triquinata*, common in fields in north and west of the United States, is a plant well known for its aromatic properties; stem dark purple, furrowed, four to six feet high;

flowers greenish white. The name is also given to the *Archangelica officinālis*, which has greenish flowers, to be found on the banks of rivers and ditches in the north of Europe, once generally cultivated as an esculent, and still valued for its medicinal properties. It has a large fleshy aromatic root, and a strong-furrowed branched stem as high as a man. It is cultivated for its agreeable aromatic odour and carminative properties. Its blanched stems, candied with sugar, form a very agreeable sweetmeat, possessing tonic and stomachic qualities.

Angelico (än-jel'i-kō), FRA, the common appellation of *Fra Giovanni da Fiesole*, one of the most celebrated of the early Italian painters. Born 1387, he entered the Dominican order in 1407, and was employed by Cosmo de Medici in painting the monastery of St. Mark and the church of St. Annunziata with frescoes. These pictures gained him so much celebrity that Nicholas V. invited him to Rome, to ornament his private chapel in the Vatican, and offered him the archbishopric of Florence, which was declined. He died at Rome 1455. His works were considered unrivalled in finish and in sweetness and harmony of colour, and were made the models for religious painters of his own and succeeding generations. His easel pictures are not rare in European galleries.

Angeln (äng'eln), a district in Sleswig of about 300 sq. m., bounded N. by the Bay of Flensburg, S. by the Schlei, E. by the Baltic, the only continental territory which has retained the name of the Angles.

Angelo (än'je-lō), MICHAEL. See *Buonarrotti*.

An'gelus, in the Rom. Cath. Ch. a short form of prayer in honour of the incarnation, consisting mainly of versicles and responses, the angelic salutation three times repeated, and a collect, so named from the word with which it commences, '*Angelus Domini*' (Angel of the Lord). Hence, also, the bell tolled in the morning, at noon, and in the evening to indicate the time when the angelus is to be recited.

Angermann (ong'er-män), a Swedish river which falls into the Gulf of Bothnia after a course of 200 miles, and is noted for its fine scenery.

Angermünde (äng'er-mün-de), a town in Prussia, on Lake Münde, 42 miles north-east of Berlin. Pop. 6833.

Angers (än-zhā), a town and river-port

of France, capital of the department of Maine-et-Loire, and formerly of the province of Anjou, on the banks of the Maine, 5½ miles from the Loire, 150 miles south-west of Paris. Has an old castle, once a place of great strength, now used as a prison, barrack, and powder-magazine; a fine cathedral of the twelfth and thirteenth centuries, with very fine old painted windows, is the seat of a bishop, and has a school of arts and manufactures; a public library, an art-gallery, a large modern hospital, the remains of a hospital founded by Henry II. of England in 1155; courts of law, theatre, &c.; manufactures sail-cloth, hosiery, leather, and chemicals, foundries, &c. In the neighbourhood are immense slate-quarries. Pop. 1891, 72,669.

Angevins (än'je-vins), natives of Anjou, often applied to the race of English sovereigns called Plantagenets (which see). Anjou became connected with England by the marriage of Matilda, daughter of Henry I., with Geoffrey V., Count of Anjou. The Angevin kings of England were Henry II., Richard I., John, Henry III., Edward I., Edward II., Edward III., and Richard I.

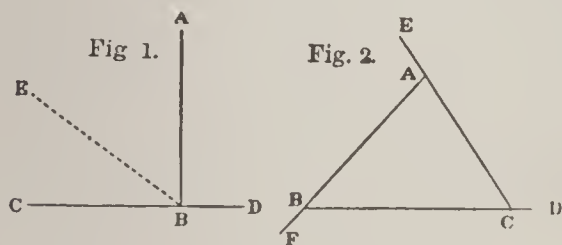
Angilbert, ST., the most celebrated poet of his age, secretary and friend of Charlemagne, whose daughter, Bertha, he married. In the latter part of his life he retired to a monastery, of which he became abbot. Died 814.

Angina Pectoris (än-jī'na pek'to-ris), or HEART-SPASM, a disease characterized by an extremely acute constriction, felt generally in the lower part of the sternum, and extending along the whole side of the chest and into the corresponding arm, a sense of suffocation, faintness, and apprehension of approaching death: seldom experienced by any but those with organic heart-disease. The disease rarely occurs before middle age and is more frequent in men than in women. Those liable to attack must lead a quiet, temperate life, avoiding all scenes which would unduly rouse their emotions. The first attack is occasionally fatal, but usually death occurs as the result of repeated seizures. The paroxysm may be relieved by opiates, or the inhalation, under due precaution, of anæsthetic vapours.

Angiosperm (än'ji-o-spërm), a term for any plant which has its seeds inclosed in a seed-vessel. Exogens are divided into those whose seeds are inclosed in a seed-vessel, and those with seeds produced and ripened without the production of a seed-vessel.

The former are *angiosperms*, and constitute the principal part of the species; the latter are *gymnosperms*, and chiefly consist of the *Coniferæ* and *Cycadaceæ*.

Angle, the point where two lines meet, or the meeting of two lines in a point. A *plane rectilineal angle* is formed by two straight lines which meet one another, but are not in the same straight line; it may be considered the degree of opening or divergence of the two straight lines which thus meet one another. A *right angle* is an angle formed by a straight line falling on another perpendicularly, or an angle which is measured by an arc of 90 degrees. When a straight line, as *AB* (fig. 1), standing on another straight line *CD*, makes the two angles *ABC* and *ABD* equal to one another, each of these angles is called a *right angle*. An *acute angle* is that which is less than a



right angle, as *EBC*. An *obtuse angle* is that which is greater than a right angle, as *EBD*. Acute and obtuse angles are both called *oblique*, in opposition to right angles. *Exterior or external angles*, the angles of any rectilineal figure without it, made by producing the sides; thus, if the sides *AB*, *BC*, *CA* of the triangle *ABC* (fig. 2) be produced to the points *FDE*, the angles *CBF*, *ACD*, *BAE* are called *exterior or external angles*. A *solid angle* is that which is made by more than two plane angles meeting in one point and not lying in the same plane, as the angle of a cube. A *spherical angle* is an angle on the surface of a sphere, contained between the arcs of two great circles which intersect each other.

Angler (*Lophius piscatorius*), also from its habits and appearance called *Fishing-frog* and *Sea-devil*, a remarkable fish often found on the British coasts. It is from 3 to 5 feet long; the head is very wide, depressed, with protuberances, and bearing long separate movable tendrils; the mouth is capacious. The American Angler, *Fishing-frog* or *Goose-fish*, of the Atlantic, is from two to three feet long; it is exceedingly voracious; its large mouth allows it to swallow fish about as big as itself.

Angles, a Low German tribe who in the earliest historical period had their seats in the district about Angeln, in the duchy of Sleswig, and who in the fifth century and subsequently crossed over to Britain along with bands of Saxons and Jutes (and probably Frisians also), and colonized a great part of what from them has received the name of England, as well as a portion of the Lowlands of Scotland. The Angles formed the largest body among the Germanic settlers in Britain, and founded the three kingdoms of East Anglia, Mercia, and Northumbria.

Anglesey (ang'gl-sē), or **ANGLESEA** ('the Angles' Island'), an island and county of North Wales, in the Irish Sea, separated from the mainland by the Menai Strait; 20 miles long and 17 miles broad; area, 193,511 acres. The surface is comparatively flat, and the climate is milder than that of the adjoining coast. The chief agricultural products are oats and barley, wheat, rye, potatoes, and turnips. Numbers of cattle and sheep are raised. Anglesey yields a little copper, lead, silver, ochre, &c. The inhabitants carry on no manufactures of importance. The Menai Strait is crossed by a magnificent suspension-bridge, 580 feet between the piers and 100 feet above high-water mark, and also by the great Britannia Tubular Railway Bridge. The chief market-towns are Beaumaris, Holyhead, Llangefni, and Amlwch. The county returns one member to Parliament. Pop. 50,079.

Anglesey, HENRY WILLIAM PAGET, MARQUIS OF, English soldier and statesman, was the eldest son of Henry, first earl of Uxbridge, and was born in 1768. He was educated at Oxford, and in 1790 entered Parliament as member for the Carnarvon boroughs. In 1793 he entered the army, and in 1794 he took part in the campaign in Flanders under the Duke of York. In 1808 he was sent into Spain with two brigades of cavalry to join Sir John Moore, and in the retreat to Coruña commanded the rear-guard. In 1812 he became, by his father's death, Earl of Uxbridge. On Napoleon's escape from Elba he was appointed commander of the British cavalry, and at the battle of Waterloo, by the charge of the heavy brigade overthrew the Imperial Guard. For his services he was created Marquis of Anglesey. In 1828 he became Lord-lieutenant of Ireland and made himself extremely popular, but was recalled in consequence of favouring Catholic emancipa-

tion. He was again lord-lieutenant in 1830; but lost his popularity by his opposition to O'Connell and his instrumentality in the passing of the Irish coercion acts; and he quitted office in 1833. In 1846-52 he was *major general* of the ordnance. He died in 1854.

Anglican Church, a term which strictly embraces only the Church of England and the Protestant episcopal churches in Ireland, Scotland, and the colonies, but is sometimes used to include also the episcopal churches of the United States. The doctrines of the Anglican Church are laid down in the Thirty-nine Articles, and its ritual is contained in the Book of Common Prayer. Within the body there is room for considerable latitude of belief and doctrine, and three sections are sometimes spoken of by the names of the High Church, Low Church, and Broad Church. See ENGLAND—Church.

Angling, the art of catching fish with a hook or *angle* (A. Sax. *angel*) baited with worms, small fish, flies, &c. We find occasional allusions to this pursuit among the Greek and Latin classical writers; it is mentioned several times in the Old Testament, and it was practised by the ancient Egyptians. The oldest work on the subject in English is the *Treatyse of Fysshinge with an Angle*, printed by Wynkyn de Worde in 1496, along with treatises on hunting and hawking, the whole being ascribed to Dame Juliana Berners or Barnes, prioress of a nunnery near St. Alban. Walton's inimitable discourse on angling was first printed in 1653. The chief appliances required by an angler are a rod, line, hooks, and baits. Rods are made of various materials, and of various sizes. The cane rods are lightest; and where fishing-tackle is sold they most commonly have the preference; but in country places the rod is often of the angler's own manufacture. Rods are commonly made in separate joints so as to be easily taken to pieces and put up again. They are made to taper from the butt end to the top, and are usually possessed of a considerable amount of elasticity. In length they may vary from 10 feet to more than double, with a corresponding difference in strength—a rod for salmon being necessarily much stronger than one suited for ordinary brook trout. The *reel*, an apparatus for winding up the line, is attached to the rod near the lower end, where the hand grasps it while fishing. The best are usually made of brass,

are of simple construction, and so made as to wind or unwind freely and rapidly. That part of the line which passes along the rod and is wound on the reel is called the *reel line*, and may vary from 20 to 100 yards in length, according to the size of the water and the habits of the fish angled for; it is usually made of twisted horse hair and silk, or of oiled silk alone. The casting line, which is attached to this, is made of the same materials, but lighter and finer. To the end of this is tied a piece of fine gut, on which the hook, or hooks, are fixed. The casting or gut lines should decrease in thickness from the reel line to the hooks. The hook, of finely tempered steel, should readily bend without breaking, and yet retain a sharp point. It should be long in the shank and deep in the bend; the point straight and true to the level of the shank; and the barb long. Their sizes and sorts must of course entirely depend on the kind of fish that are angled for. Floats formed of cork, goose and swan quills, &c., are often used to buoy up the hook so that it may float clear of the bottom. For heavy fish or strong streams a cork float is used; in slow water and for lighter fish quill floats. *Baits* may consist of a great variety of materials, natural or artificial. The principal natural baits are worms: common garden worms, brandlings, and red worms, maggots, or gentles (the larvæ of blow-flies such as are found on putrid meat), insects, small fish (as minnows), salmon roe, &c. The artificial flies so much used in angling for trout and salmon are composed of hairs, furs, and wools of every variety, mingled with pieces of feathers, and secured together by plated wire, or gold and silver thread, marking silk, wax, &c. The wings may be made of the feathers of domestic fowls, or any others of a showy colour. Some angling authorities recommend that the artificial flies should be made to resemble as closely as possible the insects on which the fish is wont to feed, but experience has shown that the most capricious and unnatural combination of feather, fur, &c., have been often successful where the most artistic imitations have failed. Artificial minnows, or other small fish, are also used by way of bait, and are so contrived as to spin rapidly when drawn through the water in order to attract the notice of the fish angled for. Angling, especially with the fly, demands a great deal of skill and practice, the throwing of the line properly being

the initial difficulty. Nowhere is the art pursued with greater success and enthusiasm than in Britain and the United States.

Anglo-Catholic, a term sometimes used to designate those churches which hold the principles of the English Reformation, the Anglican or Established Church of England and the allied churches. The term is also applied to that party in the English Church which favours doctrines and religious forms closely approaching those of the Roman Catholic Church, objects to be called Protestant, and corresponds closely with the *Ritualistic* section of the Church.

Anglo-Saxons, the name commonly given to the nation or people formed by the amalgamation of the Angles, Saxons, and Jutes, who settled in Britain in the fifth and sixth centuries after Christ, the Anglo-Saxons being simply the English people of the earlier period of English history. The tribes who were thus the ancestors of the bulk of the English-speaking nationalities came from north Germany, where they inhabited the parts about the mouths of the Elbe and Weser, and the first body of them who gained a footing in Britain are said to have landed in 449, and to have been led by Hengist and Horsa. From the preponderance of the Angles the whole country came to be called *Engla-land*, that is, the land of the Angles or English. As an outline of Anglo-Saxon history will be found in the article *England*, we shall here give only some particulars regarding the institutions and customs, language and literature, of the Anglo-Saxons.

The whole Anglo-Saxon community was frequently spoken of as consisting of the *eorls* and the *ceorls*, or the nobles and common freemen. The former were the men of property and position, the latter were the small landholders, handicraftsmen, &c., who generally placed themselves under the protection of some nobleman, who was hence termed their *hláford* or lord. Besides these there was the class of the serfs or slaves (*theówas*), who might be either born slaves or freemen who had forfeited their liberty by their crimes, or whom poverty or the fortune of war had brought into this position. They served as agricultural labourers on their masters' estates, and were mere chattels, as absolutely the property of their master as his cattle.

The king (*cyning*, *cyng*) was at the head of the state; he was the highest of the nobles and the chief magistrate. He was

not looked upon as ruling by any divine right, but by the will of the people, as represented by the *witan* (wise men) or great council of the nation. The new king was not always the direct and nearest heir of the late king, but one of the royal family whose abilities and character recommended him for the office. He had the right of maintaining a standing army of household troops, the duty of calling together the *witan*, and of laying before them public measures, with certain distinctions of dress, dwelling, &c., all his privileges being possessed and exercised by the advice and consent of the *witena-gemót* or parliament (lit. meeting of the wise). Next in rank and dignity to the king were the *ealdormen*, who were the chief *witan* or counsellors, and without whose assent laws could not be made, altered, or abrogated. They were at the head of the administration of justice in the shires, possessing both judicial and executive authority, and had as their officers the *scír-geréfan* or sheriffs. The *ealdormen* led the *fyrð* or armed force of the county, and the *ealdorman*, as such, held possession of certain lands attached to the office, and was entitled to a share of fines and other moneys levied for the king's use and passing through his hands. The whole executive government may be considered as a great aristocratical association, of which the *ealdormen* were the members, and the king little more than the president. The *ealdorman* and the king were both surrounded by a number of followers called *thegnas* or thanes, who were bound by close ties to their superior. The king's thanes were the higher in rank, they possessed a certain quantity of land, smaller in amount than that of an *ealdorman*, and they filled offices connected with the personal service of the king or with the administration of justice. The *scír-geréfa* (shire-reeve or sheriff) was also an important functionary. He presided at the county-court along with the *ealdorman* and bishop, or alone in their absence; and he had to carry out the decisions of the court, levy fines, collect taxes, &c. The shires were divided into hundreds and tithings, the latter consisting of ten heads of families, who were jointly responsible to the state for the good conduct of any member of their body. For the trial and settlement of minor causes there was a hundred court held once a month. The place of the modern parliament was held by the *witena-gemót*. Its members, who were not elected, comprised the

æthelings or princes of the blood royal, the bishops and abbots, the ealdormen, the thanes, the sheriffs, &c.

One of the peculiar features of Anglo-Saxon society was the *wergild*, which was established for the settling of feuds. A sum, paid either in kind or in money, was placed upon the life of every freeman, according to his rank in the state, his birth, or his office. A corresponding sum was settled for every wound that could be inflicted upon his person; for nearly every injury that could be done to his civil rights, his honour, or his domestic peace, &c. From the operation of this principle no one from king to peasant was exempt.

Agriculture, including especially the raising of cattle, sheep, and swine, was the chief occupation of the Anglo-Saxons. Gardens and orchards are frequently mentioned, and vineyards were common in the southern counties. The forests were extensive, and valuable both from the mast they produced for the swine, and from the beasts of the chase which they harboured. Hunting was a favourite recreation among the higher ranks, both lay and clerical. Fishing was largely carried on, herrings and salmon being the principal fish caught; and the Anglo-Saxon whaling vessels used to go as far as Iceland. The manufactures were naturally of small moment. Iron was made to some extent, and some cloth, and saltworks were numerous. In embroidery and working in gold the English were famous over Europe. There was a considerable trade at London, which was frequented by Normans, French, Flemings, and the merchants of the Hanse towns. Our Anglo-Saxon forefathers were notorious for their excess in eating and drinking, and in this respect formed a strong contrast to the Norman conquerors. Ale, mead, and cider were the common beverages, wine being limited to the higher classes. Pork and eels were favourite articles of food. The houses were rude structures, but were often richly furnished and hung with fine tapestry. The dress of the people was loose and flowing, composed chiefly of linen, and often adorned with embroidery. The men wore their hair long and flowing over their shoulders. Christianity was introduced among the Anglo-Saxons in the end of the sixth century by St. Augustine, who was sent by Pope Gregory the Great, and became the first Archbishop of Canterbury. Kent, then under

King Ethelred, was the first place where it took root, and thence it soon spread over the rest of the country. The Anglo-Saxon Church long remained independent of Rome, notwithstanding the continual efforts of the popes to bring it under their power. It was not till the tenth century that this result was brought about by Dunstan. Many Anglo-Saxon ecclesiastics were distinguished for learning and ability, but the Venerable Bede holds the first place.

The *Anglo-Saxon language*, which is simply the earliest form of English, claims kinship with Dutch, Icelandic, Danish, Swedish, and German, especially with the Low German dialects (spoken in North Germany). It was not called Anglo-Saxon by those who spoke it, but *Englisc* (English), and many condemn the former name as a misnomer. The existing remains of Anglo-Saxon literature show different dialects, of which the northern and the southern were the principal. The former was the first to be cultivated as a literary language, but afterwards it was supplanted in this respect by the southern or that of Wessex. It is in the latter that the principal Anglo-Saxon works are written. The Anglo-Saxon alphabet was substantially the same as that which we still use, except that some of the letters were different in form, while it had two characters either of which represented the sounds of *th* in *thy* and in *thing*. Nouns and adjectives are declined much as in German or in Latin. The pronouns of the first and second person had a dual number, 'we two' or 'us two' and 'you two,' besides the plural for more than two. The infinitive of the verb is in *-an*, the participle in *-ende*, and there is a gerund somewhat similar in its usage to the Latin gerund. The verb had four moods—indicative, subjunctive, imperative, and infinitive, but only two tenses, the present (often used as a future) and the past. Other tenses and the passive voice were formed by auxiliary verbs. Anglo-Saxon words terminated in a vowel much more frequently than the modern English, and altogether the language is so different that it has to be learned quite like a foreign tongue. Yet notwithstanding the large number of words of Latin or French origin that our language now contains, and the changes it has undergone, its framework, so to speak, is still Anglo-Saxon. Many chapters of the New Testament do not contain more than 4 per cent of non-Teutonic words, and as a whole it averages perhaps 6 or 7.

The existing remains of Anglo-Saxon literature include compositions in prose and poetry, some of which must be referred to a very early period, one or two perhaps to a time before the Angles and Saxons emigrated to England. The most important Anglo-Saxon poem is that called *Beowulf*, after its hero, extending to more than 6000 lines. *Beowulf* is a Scandinavian prince, who slays a fiendish cannibal, after encountering supernatural perils, and is at last slain in a contest with a frightful dragon. Its scene appears to be laid entirely in Scandinavia. Its date is uncertain; parts of it may have been brought over at the emigration from Germany, though in its present form it is much later than this. The poetical remains include a number of religious poems, or poems on sacred themes; ecclesiastical narratives, as lives of saints and versified chronicles; psalms and hymns; secular lyrics; allegories, gnomes, riddles, &c. The religious class of poems was the largest, and of these *Cædmon's* (fl. about 660) are the most remarkable. His poems consist of loose versions of considerable portions of the Bible history, and treat of the creation, the temptation, the fall, the exodus of the Israelites, the story of Daniel, the incarnation, and the harrowing of hell, or release of the ransomed souls by Christ. Other most interesting poems are those ascribed to *Cynewulf*, the Christ, *Elene*, and *Juliana*, the subjects respectively being Christ, the finding of the cross by the Empress Helena, and the life of Juliana. Rhyme was little used in Anglo-Saxon poetry, alliteration being employed instead, as in the older northern poetry generally. The style of the poetry is highly elliptical, and it is full of harsh inversions and obscure metaphors.

The Anglo-Saxon prose remains consist of translations of portions of the Bible, homilies, philosophical writings, history, biography, laws, leases, charters, popular treatises on science and medicine, grammars, &c. Many of these were translations from the Latin. The Anglo-Saxon versions of the Gospels, next to the *Moeso-Gothic*, are the earliest scriptural translations in any modern language. The Psalms are said to have been translated by Bishop *Aldhelm* (died 709), and also under Alfred's direction; and the Gospel of St. John by *Bede*; but it is not known who were the authors of the extant versions. A translation of the first seven books of the Bible is

believed to have been the work of *Ælfric*, who was Abbot of Ensham and flourished in the beginning of the eleventh century. We have also eighty homilies from his pen, several theological treatises, a Latin grammar, &c. King Alfred was a diligent author, besides being a translator of Latin works. We have under his name translations of *Bœthius De Consolatione Philosophiæ*, the Universal History of *Orosius*, *Bede's Ecclesiastical History*, the Pastoral Care of Gregory the Great, &c. The most valuable to us of the Anglo-Saxon prose writings is the *Saxon Chronicle*, as it is called, a collection of annals recording important events in the history of the country, and compiled in different religious houses. The latest text comes down to 1154. A considerable body of laws remains, as well as a large number of charters. The whole of the literature has never yet been printed.

Ango'la, a Portuguese territory in Western Africa, south of the Congo, the name being applied sometimes to the whole Portuguese territory here from about lat. 6° s. to lat. 17° s. (area, 300,000 sq. m.; pop. 2,000,000), sometimes to the northern part of it, also known as *Loanda*. This latter is flat and sterile on the coast, but becomes hilly or mountainous and fertile in the interior, and is watered by several streams, of which the *Coanza* (*Kwanza*) is the largest. The principal town is the seaport of *St. Paul de Loanda*, which was long the great Portuguese slave-mart. Exports ivory, palm-oil, coffee, hides, gum, wax, &c. Pop. 600,000.

Angola Pea (*Cajanus indicus*). See *Pigeon Pea*.

Ango'ra (anc. *Ancy'ra*), a town in the interior of Asiatic Turkey, 215 miles E.S.E. of Constantinople, with considerable remains of Byzantine architecture, and relics of earlier times, both Greek and Roman, such as the remnants of the *Monumentum Ancyranum*, raised in honour of the Emperor Augustus. All the animals of this region are long haired, especially the goats (see *Goat*), sheep, and cats. This hair forms an important export as well as the fabric called *camlet* here manufactured from it; other exports being goats' skins, dye-stuffs, gums, honey and wax, &c. Estimated pop. 35,000.

Angora Cat, the large and long-haired white variety of the common cat, said to belong originally to Angora.

Angora Goat, a variety of the common goat with long silky hair. See *Goat*.

Angostu'ra, or **CIUDAD BOLIVAR**, a city of Venezuela, capital of the province of Bolivar, on the Orinoco, about 240 miles from the sea, with governor's residence, a college, a handsome cathedral, and a considerable trade, steamers and sailing-vessels ascending to the town. Exports: gold, cotton, indigo, tobacco, coffee, cattle, &c.; imports: manufactured goods, wines, flour, &c. Pop. 10,861.

Angostura Bark, the aromatic bitter medicinal bark obtained chiefly from *Galipea officinalis*, a tree of 10 to 20 feet high, growing in the northern regions of South



Angostura-bark Tree.

America; nat. order Rutaceæ. The bark is valuable as a tonic and febrifuge, and is also used for a kind of bitters. From this bark being adulterated, indeed sometimes entirely replaced, by the poisonous bark of *Strychnos Nux Vomica*, its use as a medicine has been almost given up.

Angoulême (ân-gö-lâm), an ancient town of Western France, capital of dep. Charente, on the Charente, 60 miles N.N.E. of Bordeaux, on the summit of a rocky hill. It has a fine old cathedral, a beautiful modern town-hall, a lyceum, public library, natural history museum, hospital, lunatic asylum, &c. There are manufactures of paper, woollens, linens, distilleries, sugar-works, tanneries, &c. Pop. 1891, 36,690.

Angra (ân'grâ), a seaport of Terceira, one of the Azores, with the only convenient harbour in the whole group. It has a cathedral, a military college and arsenal, &c., and is the residence of the governor-general of the Azores, and of the foreign consuls. Pop. 11,281.

Angra Pequena (ân' grâ pe-kā'nā; Port.

'little bay'), a bay on the west of Namaqualand, S. Africa, where the German commercial firm Lüderitz in 1883 acquired a strip of territory and established a trading station. In 1884, notwithstanding some weak protests of the British, Germany took under her protection the whole coast territory from the Orange River to 26° S. lat., and soon after extended the protectorate to the Portuguese frontier, but not including the British settlement of Walfisch Bay.

Angri (ân'grē), a town of Southern Italy, 12 m. N.W. of Salerno, in the centre of a region which produces grapes, cotton, and tobacco in great quantities. Pop. 7762.

Anguilla (an-gwil'la). See *Eel*.

Anguilla (ang-gil'a), or **SNAKE ISLAND**, one of the British West India Islands, 60 m. N.E. of St. Kitts; about 20 m. long, with a breadth varying from 3 to 1½ m.; area, 35 sq. m. A little sugar, cotton, tobacco, and maize are grown. There is a saline lake in the centre, which yields a large quantity of salt. Pop. 2773, of whom 100 are white.

Anguis (ang'gwis). See *Blind-worm*.

Angus (ang'gus), a name of Forfarshire.

An'halt, a duchy of North Germany, lying partly in the plains of the Middle Elbe, and partly in the valleys and uplands of the Lower Harz, and almost entirely surrounded by Prussia; area, 906 square miles. All sorts of grain, wheat especially, are grown in abundance; also flax, rape, potatoes, tobacco, hops, and fruit. Excellent cattle are bred. The inhabitants are principally occupied in agriculture, though there are some iron-works and manufactures of woollens, linens, beet-sugar, tobacco, &c. The dukes of Anhalt trace their origin to Bernard (1170-1212), son of Albert the Bear. In time the family split up into numerous branches, and the territory was latterly held by three dukes (Anhalt-Köthen, Anhalt-Bernburg, and Anhalt-Dessau). In 1863 the Duke of Anhalt-Dessau became sole heir to the three duchies. The united principality is now incorporated in the German Empire, and has one vote in the Bundesrath and two in the Reichstag. Pop. 1890, 271,963, almost all Protestants. The chief towns are Dessau, Bernburg, Köthen, and Zerbst.

An'holt, an island belonging to Denmark, in the Cattegat, midway between Jutland and Sweden, 7 m. long, 4½ broad, largely covered with drift-sand, and surrounded by dangerous banks and reefs. Pop. 170.

Anhy'dride, one of a class of chemical

compounds, which may be regarded as representing an acid minus the water in its composition. They were formerly called *anhydrous acids*.

Anhy'drite, anhydrous sulphate of calcium, a mineral presenting several varieties of structure and colour. The *vulpinite* of Italy possesses a granular structure, resembling a coarse-grained marble, and is used in sculpture. Its colour is grayish-white, intermingled with blue.

Ani (ä'nē), a ruined city in Russian Armenia, formerly the residence of the Armenian dynasty of the Bagratidæ, having in the eleventh century a pop. of 100,000, in the thirteenth century destroyed by the Mongols.

Aniene (ä-nē-ä'nā). See *Anio*.

An'iline, a substance which has recently become of great importance, as being the basis of a number of brilliant and durable dyes. It is found in small quantities in coal-tar, but the aniline of commerce is obtained from benzene or benzole, a constituent of coal-tar, consisting of hydrogen and carbon. Benzene, when acted on by nitric acid, produces nitro-benzene; and this substance again, when treated with nascent hydrogen, generally produced by the action of acetic acid upon iron-filings or scraps, produces aniline. It is a colourless oily liquid, somewhat heavier than water, with a peculiar vinous smell, and a burning taste. Its name is derived from *anil*, the Portuguese and Spanish name for indigo, from the dry distillation of which substance it was first obtained by the chemist Unverdorben in 1826. When acted on by arsenious acid, bichromate of potassium, stannic chloride, &c., aniline produces a great variety of compounds, many of which are possessed of very beautiful colours, and are known by the names of aniline purple, aniline green, roséine, violine, bleu de Paris, magenta, &c. The manufacture of these aniline or coal-tar dyes as a branch of industry was introduced in 1856 by Mr. Perkin of London. Since then the manufacture has reached large dimensions.

An'ilism, aniline poisoning, a name given to the aggregate of symptoms which often show themselves in those employed in aniline works, resulting from the inhalation of aniline vapours. It may be either acute or chronic. In a slight attack of the former kind, the lips, cheeks, and ears become of a bluish colour, and the person's walk may be unsteady; in severe cases there is

loss of consciousness. Chronic anilism is accompanied by derangement of the digestive organs and of the nervous system, headaches, eruptions on the skin, muscular weakness, &c.

Animal, an organized and sentient living being. Life in the earlier periods of natural history was attributed almost exclusively to animals. With the progress of science, however, it was extended to plants. In the case of the higher animals and plants there is no difficulty in assigning the individual to one of the two great kingdoms of organic nature, but in their lowest manifestations, the vegetable and animal kingdoms are brought into such immediate contact that it becomes almost impossible to assign them precise limits, and to say with certainty where the one begins and the other ends. From *form* no absolute distinction can be fixed between animals and plants. Many animals, such as the sea-shrubs, sea-mats, &c., so resemble plants in external appearance that they were, and even yet popularly are, looked upon as such. With regard to *internal structure* no line of demarkation can be laid down, all plants and animals being, in this respect, fundamentally similar; that is, alike composed of molecular, cellular, and fibrous tissues. Neither are the chemical characters of animal and vegetable substances more distinct. Animals contain in their tissues and fluids a larger proportion of nitrogen than plants, whilst plants are richer in carbonaceous compounds than the former. In some animals, moreover, substances almost exclusively confined to plants are found. Thus the outer wall of Sea-squirts contains *cellulose*, a substance largely found in plant-tissues; whilst *chlorophyll*, the colouring-matter of plants, occurs in Hydra and many other lower animals. *Power of motion*, again, though broadly distinctive of animals, cannot be said to be absolutely characteristic of them. Thus many animals, as oysters, sponges, corals, &c., in their mature condition are rooted or fixed, while the embryos of many plants, together with numerous fully developed forms, are endowed with locomotive power by means of vibratile, hair-like processes called cilia. The distinctive points between animals and plants which are most to be relied on are those derived from the *nature and mode of assimilation of the food*. Plants feed on *inorganic matters*, consisting of water, ammonia, carbonic acid, and mineral matters. They can only take in

food which is presented to them in a *liquid* or *gaseous* state. The exceptions to these rules are found chiefly in the case of plants which live *parasitically* on other plants or on animals, in which cases the plant may be said to feed on organic matters, represented by the juices of their hosts. Animals, on the contrary, require *organized* matters for food. They feed either upon plants or upon other animals. But even carnivorous animals can be shown to be dependent upon plants for subsistence; since the animals upon which Carnivora prey are in their turn supported by plants. Animals, further, can subsist on *solid* food in addition to liquids and gases; but many animals (such as the Tapeworms) live by the mere imbibition of fluids which are absorbed by their tissues, such forms possessing no distinct digestive system. Animals require a due supply of *oxygen gas* for their sustenance, this gas being used in respiration. Plants, on the contrary, require *carbonic acid*. The animal exhales or gives out carbonic acid as the part result of its tissue-waste, whilst the plant taking in this gas is enabled to decompose it into its constituent carbon and oxygen. The plant retains the former for the uses of its economy, and liberates the oxygen, which is thus restored to the atmosphere for the use of the animal. Animals receive their food into the interior of their bodies, and assimilation takes place in their internal surfaces. Plants, on the other hand, receive their food into their external surfaces, and assimilation is effected in the external parts, as are exemplified in the leaf-surfaces under the influence of sunlight. All animals possess a certain amount of heat or temperature which is necessary for the performance of vital action. The only classes of animals in which a constantly-elevated temperature is kept up are birds and mammals. The bodily heat of the former varies from 100° F. to 112° F., and of the latter from 96° F. to 104° F. The mean or average heat of the human body is about 99° F., and it never falls much below this in health. Below birds animals are named 'cold-blooded,' this term meaning in its strictly physiological sense that their temperature is usually that of the medium in which they live, and that it varies with that of the surrounding medium. 'Warm-blooded' animals, on the contrary, do not exhibit such variations, but mostly retain their normal temperature in any atmosphere. The cause of the evolution

of heat in the animal body is referred to the union (by a process resembling ordinary combustion) of the carbon and hydrogen of the system with the oxygen taken in from the air in the process of respiration.

Animal Chemistry, the department of organic chemistry which investigates the composition of the fluids and the solids of animals, and the chemical action that takes place in animal bodies. There are four elements, sometimes distinctively named *organic elements*, which are invariably found in living bodies, viz. carbon, hydrogen, oxygen, and nitrogen. To these may be added, as frequent constituents of the human body, sulphur, phosphorus, lime, sodium, potassium, chlorine, and iron. The four organic elements are found in all the fluids and solids of the body. Sulphur occurs in blood and in many of the secretions. Phosphorus is also common, being found in nerves, in the teeth, and in fluids. Chlorine occurs almost universally throughout the body; lime is found in bone, in the teeth, and in the secretions; iron occurs in the blood, in urine, and in bile; and sodium, like chlorine, is of almost universal occurrence. Potassium occurs in muscles, in nerves, and in the blood-corpuscles. Minute quantities of copper, silicon, manganese, lead, and lithium are also found in the human body. The compounds formed in the human organism are divisible into the organic and inorganic. The most frequent of the latter is water, of which two-thirds (by weight) of the body are composed. The organic compounds may, like the *foods* from which they are formed, be divided into the nitrogenous and non-nitrogenous. Of the former the chief are albumen (found in blood, lymph, and chyle), casein (found in milk), myosin (in muscle), gelatin (obtained from bone), and others. The non-nitrogenous compounds are represented by organic acids, such as formic, acetic, butyric, stearic, &c.; by animal starches, sugars; and by fats and oils, as stearin and olein.

Animalcule (an-i-mal'kūl), a general name given to many forms of animal life from their minute size. We thus speak of the 'Infusorian' Animalcules among the Protozoa, of the Rotifera or 'Wheel Animalcules,' &c., but the term is not now used in zoology in any strict significance, nor is it employed in classification.

Animal Heat. See *Animal*.

Animal Magnetism. See *Mesmerism*.

Animals, CRUELTY TO, an offence against

which societies have been formed and laws passed in England and other countries. According to English law, if any person shall cruelly beat, ill-treat, overdrive, abuse, or torture any domestic animal, he shall forfeit a sum not exceeding £5 for every such offence. Societies for prevention of cruelty to animals are in operation in all the states of the American Union. The first was chartered in New York in 1866, with Henry Bergh, president, whose efforts have been untiring. See also *Vivisection*.

Animal Worship, a practice found to prevail, or to have prevailed, in the most widely distant parts of the world, both the Old and the New, but nowhere to such an amazing extent as in ancient Egypt, notwithstanding its high civilization. Nearly all the more important animals found in the country were regarded as sacred in some part of Egypt, and the degree of reverence paid to them was such that throughout Egypt the killing of a hawk or an ibis, whether voluntary or not, was punished with death. The worship, however, was not, except in a few instances, paid to them as actual deities. The animals were merely regarded as sacred to the deities, and the worship paid to them was symbolical.

An'ima Mun'di (L., 'the soul of the world'), a term applied by some of the older philosophers to the ethereal essence or spirit supposed to be diffused through the universe, organizing and acting throughout the whole and in all its different parts; a theory closely allied to *Pantheism*.

Anime (an'i-me), a resin supposed to be obtained from the trunk of an American tree (*Hymenæa Courbaril*). It is of a transparent amber colour, has a light, agreeable smell, and is soluble in alcohol. It strongly resembles copal, and, like it, is used in making varnishes.

An'imism, the system of medicine propounded by Stahl, and based on the idea that the soul (*anima*) is the seat of life. In modern usage the term is applied to express the general doctrine of souls and other spiritual beings, and especially to the tendency, common among savage races, to explain all the phenomena in nature not due to obvious natural causes by attributing them to spiritual agency. Amongst the beliefs most characteristic of animism is that of a human apparitional soul, bearing the form and appearance of the body, and living after death a sort of semi-human life.

Anio (now *Aniène* or *Teverōne*), a river in Italy, a tributary of the Tiber, which it enters from the east a short distance above Rome, renowned for the natural beauties of the valley through which it flows, and for the remains of ancient buildings there situated, as the villas of Mæcenas and the Emperor Hadrian.

Anise (an'is; *Pimpinella Anisum*), an annual plant of the natural order Umbelliferae, a native of the Levant, and cultivated in Spain, France, Italy, Malta, &c., whence the fruit, popularly called *aniseed*, is imported. This fruit is ovate, with ten narrow ribs, between which are oil-vessels. It has an aromatic smell, and is largely employed to flavour liqueurs (aniseed or anisette), sweetmeats, &c. *Star-anise* is the fruit of an evergreen Asiatic tree (*Illicium anisatum*) of the natural order Magnoliaceae, and is brought chiefly from China. Its flavour is similar to that of anise, and it is used for the same purposes. An essential oil is obtained from both kinds of anise, and is used in the preparation of cordials, for scenting soaps, &c.

Aniseed. See *Anise*.

Anisette, a liqueur flavoured with spirit of anise; also called *aniseed*.

Anjou (an-zhö), an ancient province of France, now forming the department of Maine-et-Loire, and parts of the departments of Indre-et-Loire, Mayenne, and Sarthe; area, about 3000 sq. miles. In 1060 the province passed into the hands of the house of Gatinais, of which sprang Count Godfrey V., who, in 1127, married Matilda, daughter of Henry I. of England, and so became the ancestor of the Plantagenet kings. Anjou remained in the possession of the English kings up to 1204, when John lost it to the French king Philip Augustus. In 1226 Louis VIII. bestowed this province on his brother Charles; but in 1328 it was reunited to the French crown. John I. raised it to the rank of a ducal peerage, and gave it to his son Louis. Henceforth it remained separate from the French crown till 1480, when it fell to Louis XI.

Ankarström (än'kär-streum), JAN JAKOB, the murderer of Gustavus III. of Sweden, was born about 1762, and was at first a page in the Swedish court, afterwards an officer in the royal body-guards. He was a strenuous opponent of the sovereign's measures to restrict the privileges of the nobility, and joined Counts Horn and Ribbing

and others in a plot to assassinate Gustavus. The assassination took place on the 15th March, 1792. Ankarström was tried, tortured, and executed in April, dying boasting of his deed.

Anker, an obsolete measure used in Britain for spirits, beer, &c., containing $8\frac{1}{2}$ imperial gallons. A measure of similar capacity was used in Germany and elsewhere in Europe.

An'klam, a town in Prussia, province of Pomerania, 47 miles north-west of Stettin, on the river Peene, which is here navigable. Shipbuilding, woollen and cotton manufactures, soap-boiling, tanning, &c., are carried on. Pop. 12,361.

Ankle. See *Foot*.

Anko'bar, or ANKO'BER, a town in Abyssinia, capital of Shoa, on a steep conical hill 8200 feet high. Pop. 6000.

Ankylo'sis, or ANCHYLO'SIS, stiffness of the joints caused by a more or less complete coalescence of the bones through ossification, often the result of inflammation or injury. False ankylosis is stiffness of a joint when the disease is not in the joint itself, but in the tendinous and muscular parts by which it is surrounded.

Ann, or ANNAT, in Scottish law, the half-year's stipend of a living, after the death of the clergyman, payable to his family or next of kin. The right to the ann is not vested in the clergyman himself, but in his representatives; and, accordingly, it can neither be disposed of by him nor attached for his debts.

Anna, an Anglo-Indian money of account, the sixteenth part of a rupee, and of the value of $1\frac{1}{2}d$.

An'naberg, a town in Saxony, 47 miles south-west of Dresden. Mining (for silver, cobalt, iron, &c.) is carried on, and there are manufactures of lace, ribbons, fringes, buttons, &c. Pop. 13,822.

Anna Comne'na, daughter of Alexius Comnenus I., Byzantine emperor. She was born 1083, and died 1148. After her father's death she endeavoured to secure the succession to her husband, Nicephorus Briennius, but was baffled by his want of energy and ambition. She wrote (in Greek) a life of her father Alexius, which, in the midst of much falsome panegyric, contains some valuable and interesting information. She forms a character in Sir Walter Scott's Count Robert of Paris.

Anna Ivanov'na, Empress of Russia; born in 1693, the daughter of Ivan, the

elder half-brother of Peter the Great. She was married in 1710 to the Duke of Courland, in the following year was left a widow, and in 1730 ascended the throne of the czars on the condition proposed by the senate, that she would limit the absolute power of the czars, and do nothing without the advice of the council composed of the leading members of the Russian aristocracy. But no sooner had she ascended the throne than she declared her promise null, and proclaimed herself autocrat of all the Russias. She chose as her favourite Ernest John von Biren or Biron, who was soon all-powerful in Russia, and ruled with great severity. Several of the leading nobles were executed, and many thousand men exiled to Siberia. In 1737 Anna forced the Courlanders to choose Biren as their duke, and nominated him at her death regent of the empire during the minority of Prince Ivan (of Brunswick). Anna died in 1740. See *Biren*.

An'nals, a history of events in chronological order, each event being recorded under the year in which it occurred. The name is derived from the first annual records of the Romans, which were called *annāles pontificum* or *annāles maximi*, drawn up by the *pontifex maximus* (chief pontiff). The practice of keeping such annals was afterwards adopted also by various private individuals, as by Fabius Pictor, Calpurnius Piso, and others. The name hence came to be applied in later times to historical works in which the matter was treated with special reference to chronological arrangement, as to the Annals of Tacitus.

Annam'. See *Anam*.

Annamaboe (-bō'), a seaport in Western Africa, on the Gold Coast, 10 miles east of Cape Coast Castle, with some trade in gold-dust, ivory, palm-oil, &c. Pop. about 5000.

An'nan, a royal and parliamentary burgh in Scotland, on the Annan, a little above its entrance into the Solway Firth, one of the Dumfries district of burghs. Pop. 3366. —The river ANNAN is a stream 40 miles long running through the central division of Dumfriesshire, to which it gives the name of ANNANDALE.

Annap'olis, the capital of Maryland, United States, on the Severn, near its mouth in Chesapeake Bay. It contains a college (St. John's), a state-house, and the United States naval academy. Pop. 7604.

Annap'olis, a small town in Nova Scotia, on an inlet of the Bay of Fundy, with an

important herring-fishery. It is one of the oldest European settlements in America, dating from 1604.

Ann Arbor, a town of Michigan, United States, on the Huron river, about 40 miles west of Detroit; the seat of the state university, has flour-mills, and manufactures of woollens, iron, and agricultural implements. Pop. 1890, 9431.

Annates (an'nāts), a year's income claimed for many centuries by the pope on the death of any bishop, abbot, or parish priest, to be paid by his successor. In England they were at first paid to the Archbishop of Canterbury, but were afterwards appropriated by the popes. In 1532 the Parliament gave them to the crown; but Queen Anne restored them to the church by applying them to the augmentation of poor livings. See *Queen Anne's Bounty*.

Annat'to, **ARNOT'TO**, an orange-red colouring matter, obtained from the pulp surrounding the seeds of *Bixa Orellana*, a shrub native to tropical America, and cultivated in Guiana, St. Domingo, and the East Indies. It is sometimes used as a dye for silk and cotton goods though it does not produce a very durable colour, but it is much used in medicine for tinging plasters and ointments, and to a considerable extent by farmers for giving a rich colour to cheese.

Anne, Queen of Great Britain and Ireland, was born at Twickenham, near London, 6th February, 1664. She was the second daughter of James II., then Duke of York, and Anne, his wife, daughter of the Earl of Clarendon. With her father's permission she was educated according to the principles of the English Church. In 1683 she was married to Prince George, brother to King Christian V. of Denmark. On the arrival of the Prince of Orange in 1688, Anne wished to remain with her father; but she was prevailed upon by Lord Churchill (afterwards Duke of Marlborough) and his wife to join the triumphant party. After the death of William III. in 1702 she ascended the English throne. Her character was essentially weak, and she was governed first by Marlborough and his wife, and afterwards by Mrs. Masham. Most of the principal events of her reign are connected with the war of the Spanish Succession. The only important acquisition that England made by it was Gibraltar, which was captured in 1704. Another very important event of this reign was the union of England and Scotland under the name of

Great Britain, which was accomplished in 1707. She seems to have long cherished the wish of securing the succession to her brother James, but this was frustrated by the internal dissensions of the cabinet. Grieved at the disappointment of her se-



Queen Anne.

cret wishes, she fell into a state of weakness and lethargy, and died, July 20, 1714. The reign of Anne was distinguished not only by the brilliant successes of the British arms, but also on account of the number of admirable and excellent writers who flourished at this time, among whom were Pope, Swift, and Addison. Anne bore her husband many children, all of whom died in infancy except one son, the Duke of Gloucester, who died at the age of twelve.

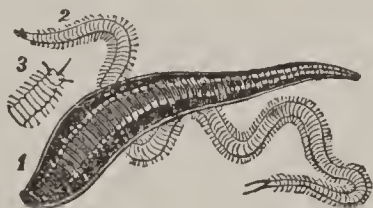
Anne (OF AUSTRIA), daughter of Philip III. of Spain, was born at Madrid in 1602, and in 1615 was married to Louis XIII. of France. Richelieu, fearing the influence of her foreign connections, did everything he could to humble her. In 1643 her husband died, and she was left regent, but placed under the control of a council. But the Parliament overthrew this arrangement, and intrusted her with full sovereign rights during the minority of her son Louis XIV. She, however, brought upon herself the hatred of the nobles by her boundless confidence in Cardinal Mazarin, and was forced to flee from Paris during the wars of the Fronde. She ultimately quelled all opposition, and was able in 1661 to transmit to her son unimpaired the royal authority. She spent the remainder of her life in retirement, and died January 20, 1666.

Annealing (an-ēl'ing), a process to which many articles of metal and glass are subjected after making, in order to render them

more tenacious, and which consists in heating them and allowing them to cool slowly. When the metals are worked by the hammer, or rolled into plates, or drawn into wire, they acquire a certain amount of brittleness, which destroys their usefulness, and has to be remedied by annealing. The tempering of steel is one kind of annealing. Annealing is particularly employed in glass-houses, and consists in putting the glass vessels, as soon as they are formed and while they are yet hot, into a furnace or oven, in which they are suffered to cool gradually. The toughness is greatly increased by cooling the articles in oil.

Annecy (än-sē), an ancient town in France, department of Haute-Savoie, situated on the Lake of Annecy, 21 miles s. of Geneva; contains a cathedral and a ruinous old castle once the residence of the counts of Genevois; manufactures of cotton, leather, paper, and hardware. Pop. 9144.—The lake is about 9 miles long and 2 broad.

Annel'ida, an extensive division or class of Annulosa or articulate animals, so called because their bodies are formed of a great number of small rings. The earth-worm,



Annelida.—1, Leech (*Sanguisuga officinalis*). 2, *Syllis monilaris*. 3, Portion of same.

the lobworm, the nereis, and the leech belong to this division.

Annihilationism, the theory of the utter extinction of man's being, both bodily and spiritual, either at death or at some later period. Archbishop Whately says that in the passages in Scripture in which 'death,' 'destruction,' 'eternal death,' are mentioned, the words may be taken as signifying literal death, real destruction, the utter end of things. Of late those who hold to this theory have adopted the term 'conditional immortality.'

Anniston, a thriving town in Calhoun county, Ala., 15 miles southwest of Jacksonville. Iron mines and the works of the Woodstock Iron Co. are here. Pop. 9998.

Annobon', or ANNOBOM, a beautiful Spanish island of Western Africa, south of the Bight of Biafra, about 4 miles long by 2 miles broad, and rising abruptly to the height of

3000 feet, richly covered with vegetation. Pop. 3000.

Annonay (än-o-nā), a town in southern France, department of Ardèche, 37 miles s.s.w. of Lyons, in a picturesque situation. It is the most important town of Ardèche, manufacturing paper and glove leather to a large extent, also cloth, felt, silk stuffs, gloves, hosiery, &c. There is an obelisk in memory of Joseph Montgolfier of balloon fame, a native of the town. Pop. 14,549.

Annotto. See *Annatto*.

An'nual, in botany, a plant that springs from seed, grows up, produces seed, and then dies, all within a single year or season.

An'nual, in literature, the name given to a class of publications which at one time enjoyed an immense yearly circulation, and were distinguished by great magnificence both of binding and illustration, which rendered them much sought after as Christmas and New Year presents. Their contents were chiefly prose tales and ballads, lyrics, and other poetry. The earliest was the Forget-me-not, started in 1822, and followed next year by the Friendship's Offering. The Literary Souvenir was commenced in 1824, and the Keepsake in 1827. Among the names of the editors occur those of Alaric A. Watts, Mrs. S. C. Hall, Harrison Ainsworth, Lady Blessington, Mary Howitt, &c. The popularity of the annuals reached its zenith about 1829, when no less than seventeen made their appearance; in 1856 the Keepsake, the last of the series, ceased to exist.

Annual Register, an English publication commenced in 1758 by Dodsley, the publisher, and since continued in yearly volumes down to the present day. It contains a complete record of all the more important events, domestic and foreign, of each year, including a narrative of the proceedings in Parliament, and obituary notices of distinguished persons. The historical department was in the first years of the Register written by Edmund Burke. There was also an Edinburgh Annual Register, the historical part of which was for several years contributed by Sir Walter Scott and afterwards by Robert Southey. It commenced in 1803 and came to a close in 1827.

Annu'ity, a sum of money paid annually to a person, and continuing either a certain number of years, or for an uncertain period, to be determined by a particular event, as the death of the recipient or annuitant, or that of the party liable to pay the annuity;

or the annuity may be perpetual. The payments are made at the end of each year, or semi-annually, or at other periods. An annuity is usually raised by the present payment of a certain sum as a consideration whereby the party making the payment, or some other person named by him, becomes entitled to an annuity, and the rules and principles by which this present value is to be computed have been the subjects of careful investigation. The present value of a perpetual annuity is evidently a sum of money that will yield an interest equal to the annuity, and payable at the same periods; and an annuity of this description, payable quarterly, will evidently be of greater value than one of the same amount payable annually, since the annuitant has the additional advantage of the interest on three of the quarterly payments until the expiration of the year. In other words, it requires a greater present capital to be put at interest to yield a given sum per annum, payable quarterly, than to yield the same annual sum payable at the end of each year. The present value of an annuity for a limited period is a sum which, if put at interest, will at the end of that period give an amount equal to the sum of all the payments of the annuity and interest; and, accordingly, if it be proposed to invest a certain sum of money in the purchase of an annuity for a given number of years the comparative value of the two may be precisely estimated, the rate of interest being given. But annuities for uncertain periods, and particularly life annuities, are more frequent, and the value of the annuity is computed according to the probable duration of the life by which it is limited. Such annuities are often created by contract, whereby the government or a private annuity office agrees, for a certain sum advanced by the purchaser, to pay a certain sum in yearly, quarterly, or other periodical payments, to the person advancing the money, or to some other named by him, during the life of the annuitant. Or the annuity may be granted to the annuitant during the life of some other person, or during two or more joint lives, or during the life of the longest liver or survivor among a number of persons named. If a person having a certain capital, and intending to spend this capital and the income of it during his own life, could know precisely how long he should live, he might lend this capital at a certain rate during his life, and by taking every year, besides the interest, a

certain amount of the capital, he might secure the same annual amount for his support during his life in such manner that he should have the same sum to spend every year, and consume precisely his whole capital during his life. But since he does not know how long he is to live he agrees with the government or an annuity office to take the risk of the duration of his life, and agree to pay him a certain annuity during his life in exchange for the capital which he proposes to invest in this way. The probable duration of his life therefore becomes a subject of computation; and for the purpose of making this calculation tables of longevity are made by noting the proportions of deaths at certain ages in the same country or district. Founding on a comparison of many such tables, the British government has empowered the postmaster general to grant annuities at the following rates, which are probably more closely adjusted to their actual value than those of insurance companies and other dealers in annuities:—To secure an immediate annuity of £100, the cost is, for males of 20 years, £2279, 3s. 4d.; for females of same age, £2482, 10s.; for males of 30 years, £2045, 8s. 4d.; for females, £2258, 6s. 8d.; for males of 40 years, £1789, 6s. 8d.; for females, £1990; for males of 60, £1148, 6s. 8d.; females, £1275, 8s. 4d.; and so on. In the United States the granting of annuities is conducted by private companies or corporations. The following are the approved rates of the best managed companies: In consideration of \$1000 paid to a company the annuity granted to a person aged 40 would be \$52.75; aged 45, \$58.10; aged 50, \$64.70; aged 55, \$73.50; aged 60, \$86.20; aged 65, \$100; aged 70, \$123.45; aged 75, \$145.95; aged 80, \$180.15. The purchase of annuities, as a system, has never gained much foothold in America—the endowment plan of life insurance, by which after the lapse of a term of years the insured receives a sum in bulk, being preferred.

Annuloi'da, in some modern zoological classifications, a division (sub-kingdom) of animals, including the Rotifera, Scolecida (tape-worms, &c.), all which are more or less ring-like in appearance, and the Echinodermata, whose embryos show traces of annulation.

Annulo'sa, a division (sub-kingdom) of animals regarded by some as synonymous with the Arthropoda or Articulata; according to other systematists, including

both the Articulata and Annulata or worms.

Annunciation, the declaration of the angel Gabriel to the Virgin Mary informing her that she was to become the mother of our Lord.—*Annunciation* or *Lady Day* is a feast of the church in honour of the annunciation, celebrated on the 25th of March.—The Italian order of *Knights of the Annunciation*, was instituted by Amadeus VI., duke of Savoy, in 1360. The king is always grand-master. The knights must be of high rank, and must already be members of the order of St. Mauritius and St. Lazarus. The decoration of the order consists of a golden shield suspended to a chain or collar of roses and knots, the letters F. E. R. T. being inscribed on the roses, and standing for *Fortitudo ejus Rhodum tenuit* (its bravery held Rhodes).—There are two orders of *nuns of the Annunciation*, one originally French, founded in 1501 by Joanna of Valois, the other Italian, founded in 1604 by Maria Vittoria Fornari of Genoa.

An'oa, an animal (*Anoa depressicornis*) closely allied to the buffalo, about the size of an average sheep, very wild and fierce, inhabiting the rocky and mountainous localities of the island of Celebes. The horns are straight, thick at the root, and set nearly in a line with the forehead.

Ano'bium, a genus of coleopterous insects, the larvæ of which often do much damage by their boring into old wood, including several known by the name of *death-watch*. *A. striatum*, a common species, when frightened, is much given to feigning death.

An'ode (Gr. *ana*, up, *hodos*, way), the positive pole of the voltaic current, being that part of the surface of a decomposing body which the electric current enters: opposed to *cathode* (Gr. *kata*, down, *hodos*, way), the way by which it departs.

An'odon, **Anodon'ta**, a genus of lamelli-branchiate bivalves, including the fresh-water mussels, without or with very slight hinge-teeth. See *Mussel*.

An'odyne, a medicine, such as an opiate or narcotic, which allays pain.

Anointing, rubbing the body or some part of it with oil, often perfumed. From time immemorial the nations of the East have been in the habit of anointing themselves for the sake of health and beauty. The Greeks and Romans anointed themselves after the bath. Wrestlers anointed themselves in order to render it more diffi-

cult for their antagonists to get hold of them. In Egypt it seems to have been common to anoint the head of guests when they entered the house where they were to be entertained, as shown in the cut. In the Mosaic law a sacred character was attached

to the anointing of the garments of the priests and things belonging to the ceremonial of worship. The Jewish priests and kings were anointed when inducted into office, and were called the *an-*



Egyptian anointing a Guest.

ointed of the Lord, to show that their persons were sacred and their office from God. In the Old Testament also the prophecies respecting the Redeemer style him *Messias*, that is, the *Anointed*, which is also the meaning of his Greek name Christ. The custom of anointing still exists in the Roman Catholic Church in the ordination of priests and the confirmation of believers and the sacrament of extreme unction. The ceremony is also frequently a part of the coronation of kings.

Anom'alure (*Anomalūrus*), a genus of rodent animals inhabiting the west coast of Africa, resembling the flying-squirrels, but having the undersurface of the tail 'furnished for some distance from the roots with a series of large horny scales, which, when pressed against the trunk of a tree, may subserve the same purpose as those instruments with which a man climbs up a telegraph pole to set the wires.' They are called also scale-tails, or scale-tailed squirrels, but some authorities class them with the porcupines rather than the squirrels. There are several species of them, but little is known of their habits.

Anom'aly, in astronomy, the angle which a line drawn from a planet to the sun has passed through since the planet was last at its perihelion or nearest distance to the sun. The *anomalous year* is the interval between two successive times at which the earth is in perihelion, or 365 days 6 hours 13 minutes 45 seconds. In consequence of the advance of the earth's perihelion among the stars in the same direction as the earth's motion and of the precession of the equi-

noxes, which carries the equinoxes back in the opposite direction to the earth's motion, the anomalistic year is longer than the sidereal year, and still longer than the tropical or common year.

Anomu'ra, a section of the crustaceans of the order Decapoda, with irregular tails not formed to assist in swimming, including the hermit-crabs and others.

Ano'na, a genus of plants, the type of the nat. order Anonaceæ. *A. squamōsa* (sweet-sop) grows in the West Indian Islands, and yields an edible fruit having a thick, sweet, luscious pulp. *A. muricāta* (sour-sop) is cultivated in the West and East Indies; it produces a large pear-shaped fruit, of a greenish colour, containing an agreeable slightly acid pulp. The genus produces other edible fruits, as the common custard-apple or bullock's heart, from *A. reticulāta*, and the cherimoyer of Peru, from *A. Cherimolia*.

Anona'ceæ, a natural order of trees and shrubs, having simple, alternate leaves, destitute of stipules, by which character they are distinguished from the Magnoliaceæ, to which they are otherwise closely allied. They are mostly tropical plants of the Old and the New World, and are generally aromatic. See *Anona*.

Anon'ymous, literally 'without name,' applied to anything which is the work of a person whose name is unknown or who keeps his name secret. *Pseudonym* is a term used for an assumed name. The knowledge of the anonymous and pseudonymous literature is indispensable to the bibliographer, and large dictionaries giving the titles and writers of such works have been published.

Anoplothe'rium, an extinct genus of the Ungulata or Hoofed Quadrupeds, forming the type of a distinct family, which were in many respects intermediate between the swine and the true ruminants. These animals were pig-like in form, but possessed

long tails, and had a cleft hoof, with two rudimentary toes. Some of them were as small as a guinea-pig, others as large as an ass. Six incisors, two canines, eight premolars, and six molars existed in each jaw, the series being continuous, no interval existing in the jaw. *A. commūne*, from the Eocene rocks, is a familiar species.

Anoplu'ra, an order of apterous insects, of which the type is the genus *Pedicūlus* or louse.

Anopshehr. See *Anupshahr*.

Anorexia. See *Appetite*.

Anos'mia, a disease consisting in a diminution or destruction of the power of smelling, sometimes constitutional, but most frequently caused by strong and repeated stimulants, as snuff, applied to the olfactory nerves.

Anoura. See *Anura*.

Anquetil-Duperron (ānk-tāl-dū-pā-roŋ), ABRAHAM HYACINTHE, a French orientalist, born 1731, died 1805. He studied theology for some time, but soon devoted himself to the study of Hebrew, Arabic, and Persian. His zeal for the Oriental languages induced him to set out for India, where he prevailed on some of the Parsee priests to instruct him in the Zend and Pehlevi and to give him some of the Zoroastrian books. In 1762 he returned to France with a valuable collection of MSS. In 1771 he published his *Zend-Avesta*, a translation of the Vendidad, and other sacred books, which excited great sensation. Among his other works are *L'Inde en Rapport avec l'Europe* (1790), and a selection from the Vedas. His knowledge of the Oriental languages was by no means exact.

Ansbach. See *Anspach*.

An'selm, Sr., a celebrated Christian philosopher and theologian, born at Aosta, in Piedmont, in 1033; died at Canterbury 1109. At the age of twenty-seven (1060) he became a monk at Bec, in Normandy, whither he had been attracted by the celebrity of Lanfranc. Three years later he was elected prior, and in 1078 he was chosen abbot, which he remained for fifteen years. During this period of his life he wrote his first philosophical and religious works: the dialogues on Truth and Free-will, and the treatises *Monologion* and *Proslogion*; and at the same time his influence made itself so felt among the monks under his charge that Bec became the chief seat of learning in Europe. In 1093 Anselm was offered by William Rufus the archbishopric of Canter-



Anona or Sour-sop (*Anōna muricāta*).

bury, and accepted it, though with great reluctance, and with the condition that all the lands belonging to the see should be restored. William II. soon quarrelled with the archbishop, who would show no subservience to him, and would persist in acknowledging Pope Urban in opposition to the antipope Clement. William ultimately had to give way. He both himself acknowledged Urban and conferred the pallium upon Anselm. The king became his bitter enemy, however, and so great were Anselm's difficulties that in 1097 he set out for Rome to consult with the pope. Urban received him with great distinction, but did not venture really to take the side of the prelate against the king, though William had refused to receive Anselm again as archbishop, and had seized on the revenues of the see of Canterbury, which he retained till his death in 1100. Anselm accordingly remained abroad, where he wrote most of his celebrated treatise on the atonement, entitled *Cur Deus Homo* (Why God was made Man; translated into English, Oxford, 1858). When William was succeeded by Henry I. Anselm was recalled; but Henry insisted that he should submit to be reinvested in his see by himself, although the popes claimed the right of investing for themselves alone. Much negotiation followed, and Henry did not surrender his claims till 1107, when Anselm's long struggle on behalf of the rights of the church came to an end. Anselm was a great scholar, a deep and original thinker, and a man of the utmost saintliness and piety. The chief of his writings are the *Monologion*, the *Proslogion*, and the *Cur Deus Homo*. The first is an attempt to prove inductively the existence of God by pure reason without the aid of Scripture or authority; the second is an attempt to prove the same by the deductive method; the *Cur Deus Homo* is intended to prove the necessity of the incarnation. Among his numerous other writings are more than 400 letters. His life was written by his domestic chaplain and companion, Eadmer, a monk of Canterbury.

An'sgar, or ANSHAR, called the *Apostle of the North*, was born in 801 in Picardy, and he took the monastic vows while still in his boyhood. In the midst of many difficulties he laboured as a missionary in Denmark and Sweden; dying in 864 or 865, with the reputation of having undertaken, if not the first, the most successful attempts for the propagation of Christianity in the North.

An'son, GEORGE, LORD, celebrated English navigator; born 1697, died 1762. He entered the navy at an early age and became a commander in 1722, and captain in 1724. He was for a long time on the South Carolina station. In 1740 he was made commander of a fleet sent to the South Sea, directed against the trade and colonies of Spain. The expedition consisted of five men-of-war and three smaller vessels, which carried 1400 men. After much suffering and many stirring adventures he reached the coast of Peru, made several prizes, and captured and burned the city of Païta. His squadron was now reduced to one ship, the *Centurion*, but with it he took the Spanish treasure galleon from Acapulco, and arrived in England in 1744, with treasure to the amount of \$2,500,000, having circumnavigated the globe. His adventures and discoveries are described in the well-known *Anson's Voyage*, compiled from materials furnished by Anson. A few days after his return he was made rear-admiral of the blue, and not long after rear-admiral of the white. His victory over the French admiral Jonquière, near Cape Finisterre in 1747, raised him to the peerage, with the title of Lord Anson, Baron of Soberton. Four years afterwards he was made first lord of the admiralty. In 1758 he commanded the fleet before Brest, protected the landing of the British at St. Malo, Cherbourg, &c., and received the repulsed troops into his vessels.

Ansonia, New Haven co., Conn., taken from Derby in 1889. Pop. 1890, 10,342.

Anspach (än'späh), or ANSBACH, a town in Bavaria, at the junction of the Holzbach with the Lower Rezat, 24 miles south-west of Nürnberg. Anspach gave its name to an ancient principality or margravate, which had a territory of about 1300 square miles, with 300,000 inhabitants, in the end of the eighteenth century. The last margrave sold his possessions in 1791 to Prussia. It was occupied by the French in 1806, and transferred by Napoleon to Bavaria. The town has manufactures of trimmings, buttons, straw-wares, &c. Pop. 14,195.

An'sted, DAVID THOMAS, an English geologist, born 1814, died 1880. He was professor of geology at King's College, London, and assistant-secretary to the Geological Society, whose quarterly journal he edited for many years. His writings on geology were standard authorities.

An'ster, JOHN, LL.D., professor of civil

law in the University of Dublin, born in co. Cork, 1793; died 1867. He published a volume of poems, and was a frequent contributor to Blackwood's Magazine, the Dublin University Magazine, the North British Review, &c., but is chiefly known by his fine translation of Goethe's *Faust*, 1835-64.

An'stey, CHRISTOPHER, an English poet, born 1724, died 1805. He was author of *The New Bath Guide*, a humorous and satirical production describing fashionable life at Bath in the form of a series of letters in different varieties of metre, which had a great reputation in its day.

Anstey, F. See *Guthrie, Thomas Anthony*.

Anstruther (an'struth-ër; popularly an'stër), EASTER and WISTER, two small royal and parliamentary burghs of Scotland, in Fifeshire, forming, with the contiguous royal burgh of Cellardyke or Nether Kilrenny, one fishing and seaport town. Total pop. 4712.

Ant, the common name of hymenopterous (or membranous-winged) insects of various genera, of the family Formicidæ, found in most temperate and tropical regions. They are small but powerful insects, and have long been noted for their remarkable intelligence and interesting habits. They live in communities regulated by definite laws, each member of the society bearing a well-defined and separate part in the work of the colony. Each community consists of males; of females much larger than the males; and of barren females, otherwise called neuters, workers, or nurses. The neuters are wingless, and the males and females only acquire wings for their 'nuptial flight,' after which the males perish, and the few females which escape the pursuit of their numerous enemies divest themselves of their wings, and either return to established nests, or become the foundresses of new colonies. The neuters perform all the labours of the ant-hill or abode of the community; they excavate the galleries, procure food, and feed the larvæ or young ants, which are destitute of organs of motion. In fine weather they carefully convey them to the surface for the benefit of the sun's heat, and as attentively carry them to a place of safety either when bad weather is threatened or the ant-hill is disturbed. In like manner they watch over the safety of the nymphs or pupæ about to acquire their perfect growth. Some communities possess a special type of neuters, known as 'soldiers,' from the duties that specially

fall upon them, and from their powerful biting jaws. There is a very considerable variety in the materials, size, and form of ant-hills, or nests, according to the peculiar nature or instinct of the species. Most of American ants form nests in woods, fields, or gardens, their abodes being generally in the form of small mounds rising above the surface of the ground and containing numerous galleries and apartments. Some excavate nests in old tree-trunks. Houses built by the common wood-ant (*Formica rufa*) are frequently as large as a small hay-cock. Some ants live on animal food, very quickly picking quite clean the skeleton of any dead animal they may light on. Others live on saccharine matter, being very fond of the sweet substance, called honey-dew, which exudes from the bodies of Aphides, or plant-lice. These they sometimes keep in their nests, and sometimes tend on the plants where they feed; sometimes they even superintend their breeding. By stroking the aphides with their antennæ they cause them to emit the sweet fluid, which the ants then greedily sip up. Various other insects are looked after by ants in a similar manner, or are found in their nests. It has been observed that some species, like the Sanguinary Ant (*Formica sanguinea*), resort to violence to obtain working ants of other species for their own use, plundering the nests of suitable kinds of their larvæ and pupæ, which they carry off to their own nests to be carefully reared and kept as slaves. In temperate countries male and female ants survive, at most, till autumn, or to the commencement of cool weather, though a very large proportion of them cease to exist long previous to that time. The neuters pass the winter in a state of torpor, and of course require no food. The only time when they require food is during the season of activity, when they have a vast number of young to feed. Some ants of southern Europe feed on grain, and store it up in their nests for use when required. Some species have stings as weapons, others only their powerful mandibles, or an acrid and pungent fluid (formic acid) which they can emit. The name ant is also given to the neuropterous insects otherwise called Termites. See *Termites*.

Antac'id, an alkali, or any remedy for acidity in the stomach. Dyspepsia and diarrhœa are the diseases in which antacids are chiefly employed. The principal antacids in use are magnesia, lime, and their carbonates, and the carbonates of potash and soda.

Antæ'us, the giant son of Poseidon (Neptune) and Gē (the Earth), who was invincible so long as he was in contact with the earth. Heracles (Hercules) grasped him in his arms and stifled him suspended in the air.

Antakieh, Antakia. See *Antioch*.

Antal'kali, a substance which neutralizes an alkali, and is used medicinally to coun-

teract an alkaline tendency in the system. All true acids have this power.

Antananarivo (an-tan-an-a-rē'vō), the capital of Madagascar, situated in the central province of Imérina; of late years almost entirely rebuilt, its old timber houses having been replaced by buildings of sun-dried brick on European models. It con-



Antananarivo.

tains two royal palaces, immense timber structures, one of which has been lately surrounded with a massive stone verandah with lofty corner towers. It has manufactures of metal work, cutlery, silk, &c., and exports sugar, soap, and oil. Pop. about 100,000.

An'tar, an Arabian warrior and poet of the sixth century, author of one of the seven Moallakas hung up in the Kaaba at Mecca; hero of a romance analogous in Arabic literature to the Arthurian legend of the English. The romance of Antar, which has been called the Iliad of the Desert, is composed in rhythmic prose interspersed with fragments of verse, many of which are attributed to Antar himself, and has been generally ascribed to Asmai (b. 740 A.D.; d. about 830 A.D.), preceptor to Harun-al-Rashid.

Antarctic (ant-ärk'tik), relating to the southern pole or to the region near it. The *Antarctic Circle* is a circle parallel to the equator and distant from the south pole

23° 28', marking the area within which the sun does not set when on the tropic of Capricorn. The Antarctic Circle has been arbitrarily fixed on as the limits of the Antarctic Ocean, it being the average limit of the pack-ice; but the name is often extended to embrace a much wider area. The lands in or near the Antarctic Circle are but imperfectly known, the work of exploration having been hitherto baffled by what seems an unsurmountable ice-barrier. Sir James Ross reached the highest south latitude yet attained in 1841-42, discovering *Victoria Land* (extending to about 79° s. lat.) with its volcanoes Erebus (12,400 ft.) and Terror (10,900 ft.). The South Shetland Islands, Enderby Land, Graham's Land, &c., have also been discovered in this ocean. See *South Polar Expeditions*.

Ant-eater, a name given to mammals of various genera that prey chiefly on ants, but usually confined to the genus *Myrmecophaga*, order Edentata. In this genus the head is remarkably elongated, the jaws

destitute of teeth, and the mouth furnished with a long, extensile tongue covered with glutinous saliva, by the aid of which the animals secure their insect prey. The eyes are particularly small, the ears short and round, and the legs, especially the anterior, very robust, and furnished with long, compressed, acute nails, admirably adapted for



Ant-bear (*Myrmecophaga jubata*).

breaking into the ant-hills. The most remarkable species is the *Myrmecophaga jubata*, or ant-bear, a native of the warmer parts of South America. It is from 4 to 5 feet in length from the tip of the muzzle to the origin of the black bushy tail, which is about two feet long. The body is covered with long hair, particularly along the neck and back. It is a harmless and solitary animal, and spends most of its time in sleep. Some are adapted for climbing trees in quest of the insects on which they feed, having prehensile tails. All are natives of South America. The name ant-eater is also given to the pangolins and to the armadillo. The echidna of Australia is sometimes called porcupine ant-eater.

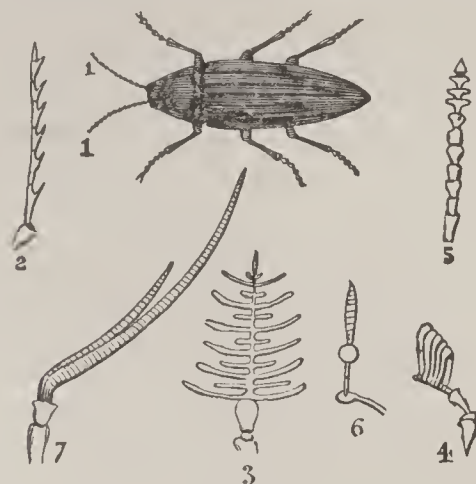
Antecedent, in grammar, the noun to which a relative or other pronoun refers; as, Solomon was the *prince who* built the temple, where the word *prince* is the antecedent of *who*.—In logic, that member of a hypothetical or conditional proposition which contains the condition, and which is introduced by *if* or some equivalent word or words; as, if the sun is fixed, the earth must move. Here the first and conditional proposition is the *antecedent*, the second the *consequent*.

Antediluvian, before the flood or deluge of Noah's time; relating to what happened before the deluge. In geology the term has been applied to organisms, traces of which are found in a fossil state in formations preceding the Diluvial, particularly to extinct animals such as the paleotherium, the mastodon, &c.

An'telope, the name given to the members

of a large family of Ruminant Ungulata or Hoofed Mammalia, closely resembling the Deer in general appearance, but essentially different in nature from the latter animals. They are included with the Sheep and Oxen in the family of the Cavicornia or 'Hollow-horned' Ruminants. Their horns, unlike those of the Deer, are not deciduous, but are permanent; are never branched, but are often twisted spirally, and may be borne by both sexes. They are found in greatest number and variety in Africa. Well-known species are the chamois (European), the gazelle, the addax, the eland, the koodoo, the gnu, the springbok, the sasin or Indian antelope, and the prongbuck of America.

Anten'næ, the name given to the movable jointed organs of touch and hearing attached to the heads of insects, myriapods, &c., and commonly called horns or feelers. They present a very great variety of forms.



Antennæ.

1, 1, Filiform Antennæ of Cucujo Firefly of Brazil (*Pyrophorus luminosus*). 2, Denticulate Antenna; 3, Bipinnate; 4, Lamellicorn; 5, Clavate; 6, Geniculate; 7, Antenna and Antennule of Crustacean.

Antequera (än-te-kā'rā), a city of Andalusia, in Spain, in the province of Malaga, a place of some importance under the Romans, with a ruined Moorish castle. Manufacturers of wollens, leather, soap, &c. Pop. 27,201.

Ant'eros, in Greek mythology, the god of mutual love. According to some, however, Anteros is the enemy of love, or the god of antipathy; he was also said to punish those who did not return the love of others.

Anthelion, pl. **Anthelia**, a luminous ring, or rings, seen by an observer, especially in alpine and polar regions, around the shadow of his head projected on a cloud or fog-bank, or on grass covered with dew, 50 or 60 yards distant, and opposite the sun

when rising or setting. It is due to the diffraction of light.

Anthelmin'thics, **Anthelmin'tics**, a class of remedies used to destroy worms when lodged in the alimentary canal; classed as vermicides or vermifuges, according as the object is to kill the worms, or to expel them by purgation.

An'them, originally a hymn sung in alternate parts; in modern usage, a sacred tune or piece of music set to words taken from the Psalms or other parts of the Scriptures, first introduced into church service in Elizabeth's reign; a developed motet. The anthem may be for one, two, or any number of voices, but seldom exceeds five parts, and may or may not have an organ accompaniment written for it.

Anthe'mion, an ornament or ornamental series used in Greek and Roman decoration,



Anthemion.

which is derived from floral forms, more especially the honeysuckle. It was much used for the ornamentation of friezes and interiors, for the decoration of fictile vases, the borders of dresses, &c.

An'themis, a genus of composite plants, comprising the camomile or chamomile.

Anthe'mius, a Greek mathematician and architect of Lydia; designed the church of St. Sophia at Constantinople, and is credited with the invention of the dome; died A.D. 534.

An'ther, the male organ of the flower; that part of the stamen which is filled with pollen.

Antheste'ria, an annual Greek festival held in honour of all the gods, more particularly of Bacchus or Dionysus, and to celebrate the beginning of spring, and the season when the wine of the previous vintage was considered fit for use.

Anthocy'anin, the blue colour of flowers, a pigment obtained from those petals of flowers which are blue by digesting them in spirits of wine.

Anthol'ogy (Gr. *anthos*, a flower, and

legein, to gather), the name given to several collections of short poems which have come down from antiquity. The first who compiled a Greek anthology was Meleager, a Syrian, about 60 B.C. He entitled his collection, which contained selections from forty-six poets besides many pieces of his own, the Garland; a continuation of this work by Philip of Thessalonica in the age of Tiberius was the first entitled Anthology. Later collections are that of Constantine Cephalas, in the tenth century, who made much use of the earlier ones, and that of Maximus Planudes, in the fourteenth century, a monk of Constantinople, whose anthology is a tasteless series of extracts from the Anthology of Cephalas, with some additions. The treasures contained in both, increased with fragments of the older poets, idyls of the bucolic poets, the hymns of Callimachus, epigrams from monuments and other works, have been published in modern times as the Greek Anthology. There is no ancient Latin anthology, the oldest being that of Scaliger (1573). There are also Arabic, Persian, Turkish, &c., anthologies.

An'thon, CHARLES, J.L.D., an American editor of classical school-books, and of works intended to facilitate the study of Greek and Latin literature; born 1797, died 1867. He was long a professor in Columbia College, New York.

An'thony, St., the founder of monastic institutions; born near Heraclea, in Upper Egypt, A.D. 251. Giving up all his property he retired to the desert, where he was followed by a number of disciples, who thus formed the first community of monks. He died at the age of 105.—*St. Anthony's Fire*, a name given to erysipelas.

An'thracite, glance or blind coal, a non-bituminous coal of a shining lustre, approaching to metallic, and which burns without smoke, with a weak or no flame, and with intense heat. It consists of, on an average, 90 per cent carbon, 3 hydrogen, and 5 ashes. It has some of the properties of coke or charcoal, and, like that substance, represents an extreme metamorphism of coal under the influence of heat or of volcanic disturbance. It is found in England, Scotland, and Ireland, and in large quantities in the United States, chiefly in Pennsylvania.

An'thrax, a fatal disease to which cattle, horses, sheep, and other animals are subject, always associated with the presence of an extremely minute micro-organism (*Bacillus*



a, Ovules.
b b, Anthers.
c, Stigma.

anthracis) in the blood. It frequently assumes an epizootic form, and extends over large districts, affecting all classes of animals which are exposed to the exciting causes. It is also called splenic fever, and is communicable to man, appearing as carbuncle, malignant pustule, or wool-sorter's disease.

Anthropolatry, the worship of man, a word always employed in reproach; applied by the Apollinarians, who denied Christ's perfect humanity, towards the orthodox Christians.

Anthropolite, a petrification of the human body or skeleton, or of parts of the body, by the incrusting action of calcareous waters, and hence hardly to be considered fossil or sub-fossil.

Anthropology, the science of man and mankind, including the study of man's place in nature, that is, of the measure of his agreement with and divergence from other animals; of his physical structure and psychological nature, together with the extent to which these act and react on each other; and of the various tribes of men, determining how these may have been produced or modified by external conditions, and consequently taking account also of the advance or retrogression of the human race. It puts under contribution all sciences which have man for their object, as archæology, comparative anatomy, physiology, psychology, climatology, &c. See *Ethnology*.

Anthropometry, the systematic examination of the height, weight, and other physical characteristics of the human body. It was shown in the British Association Report of 1883 that variations in stature, weight, and complexion, existing in different districts of the British islands, are chiefly due to difference of racial origin. The Scotch male adults stand first in height (68·71 inches), the Irish second (67·90 inches), the English third (67·66 inches), and the Welsh last (66·66 inches). In weight the Scotch take the first place (165·3 lbs.), the Welsh the second (158·3 lbs.), the English the third (155·0 lbs.), and the Irish the last (154·1 lbs.). The average height of adult females is 4·71 inches less than the male average, and their average weight 32·2 lbs. under that of the males. The average height of the adult males of the principal races or nationalities of the world may be given as under; but it is acknowledged that more numerous measurements might alter some of the figures considerably:—Polynesians 69·33 in., Patagonians 69 in., Negroes of the

Congo 69 in., Scotch 68·71 in., Iroquois Indians 68·28 in., Irish 67·90 in., United States (whites) 67·67 in., English 67·66 in., Norwegians 67·66 in., Zulus 67·19 in., Welsh 66·66 in., Danes 66·65 in., Dutch 66·62 in., American Negroes 66·62 in., Hungarians 66·58 in., Germans 66·54 in., Swiss 66·43 in., Belgians, 66·38 in., French 66·23 in., Berbers 66·10 in., Arabs 66·08 in., Russians 66·04 in., Italians 66 in., Spaniards 65·66 in., Esquimaux 65·10 in., Papuans 64·78 in., Hindus 64·76 in., Chinese 64·17 in., Poles 63·87 in., Finns 63·60 in., Japanese 63·11 in., Peruvians 63 in., Malays 62·34 in., Lapps 59·2 in., Bosjesmans 52·78 in. General average 65·25 in. Interesting results would also be obtained by finding the chest-measurement, length of arms and legs, &c., of the different peoples.

Anthropomorphism, the representation or conception of the Deity under a human form, or with human attributes and affections. *Anthropomorphism* is founded in the natural inaptitude of the human mind for conceiving spiritual things except through sensuous images, and in its consequent tendency to accept such expressions as those of Scripture when it speaks of the eye, the ear, and the hand of God, of his seeing and hearing, of his remembering and forgetting, of his making man in his own image, &c., in a too literal sense. The term is also applied to that doctrine which attributes to animals mental faculties of the same nature as those of man, though much lower in degree: strictly called *biological anthropomorphism*, to distinguish it from anthropomorphism proper, or *theological anthropomorphism*.

Anthropophagi, the name given to those individuals or tribes by whom human flesh is eaten: man-eaters, cannibals. That there are nations who eat the flesh of enemies slain in battle, for example the Niam-Niam of Central Africa, and till recently the New Zealanders, is well known; but there are none who make human flesh their usual food. The Caribs are said to have been cannibals at the time of the Spanish conquest of America, and the word 'cannibal' is derived from their name.

Anthus. See PIPIT.

Antibes (ân-tēb), a fortified town and seaport of France, dep. Alpes-Maritimes, on the Mediterranean, 11 miles s.s.w. of Nice; founded ab. 340 B.C. Traces of a Roman circus and part of an aqueduct still remain; and urns, lamps, &c., have been found. Pop. 5923.

Anti-burgher. See *Burgher*.

An'tichlor, the name given to any chemical substance, such as hyposulphite of sodium, employed to remove the small quantity of chlorine which obstinately adheres to the fibres of the cloth when goods are bleached by means of chlorine.

An'tichrist, a word occurring in the first and second epistles of St. John, and nowhere else in Scripture, in passages having an evident reference to a personage real or symbolical mentioned or alluded to in various other passages both of the Old and New Testaments. In every age the church has held through all its sects some definite expectation of a formidable adversary of truth and righteousness prefigured under this name. Thus Roman Catholics have found Antichrist in heresy, and Protestants in Romanism. In one point the sects have generally been agreed, namely, in regarding the various intimations on this subject in the Old and New Testaments as a homogeneous declaration or warning, inspired by the spirit of prophecy, of danger to the true religion from some disaffection and revolt organized in the latter days by Satan. Most modern critics take a different view of the matter. They do not regard the various Scriptural writers who have dealt with this subject as having had any common inspiration or design. They believe that each writer from his own point of view, guided by mere human sagacity, gives expression in his predictions to his own individual apprehensions, or narrates as prediction what he already knows. It is the near political horizon which suggests the danger, or contemporary history the substance of the prophecy; thus the Antichrist of Daniel is Antiochus Epiphanes, that of St. John Nero, that of St. Paul some adversary of Christianity about to appear in the time of the Emperor Claudius.

Anticli'max, a sudden declension of a writer or speaker from lofty to mean thoughts or language, as in the well-known lines:

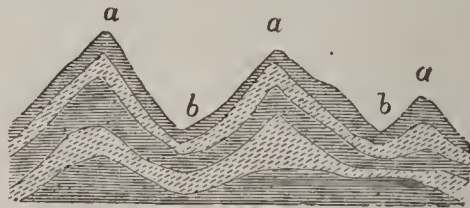
Next comes Dalhousie, the great god of war,
Lieutenant-colonel to the Earl of Mar.

Anticli'nal line or axis, in geology, the ridge of a wave-like curve made by a series of superimposed strata, the strata dipping from it on either side as from the ridge of a house: a *synclinal line* runs along the trough of such a wave.

Anti-Corn-Law League, an association formed in England in 1836 to procure the

repeal of the laws regulating or forbidding the exportation of corn. The object of the league was attained in 1846.

Anticos'ti, an island of Canada, in the mouth of the St. Lawrence, 125 miles long by 30 miles broad. The interior is moun-



a a a, Anticlinal Line. *b b*, Synclinal Line.

tainous and wooded, but there is much good land, and it is well adapted for agriculture. The fisheries are valuable. The population is scanty, however.

Anticy'clone, a phenomenon presenting some features opposite to those of a cyclone. It consists of a region of high barometric pressure, the pressure being greatest in the centre, with light winds flowing outwards from the centre, and not inwards as in the cyclone, accompanied with great cold in winter and with great heat in summer.

Anticyra (an-tis'i-ra), the name of two towns of Greece, the one in Thessaly, the other in Phocis, famous for hellebore, which in ancient times was regarded as a specific against insanity and melancholy. Hence various jocular allusions in ancient writers.

Antidiphtheritic. See *Anti-Toxin*.

An'tidote, a medicine to counteract the effects of poison.

Antietam (an-tē'tam), a small stream in the United States which falls into the Potomac about 50 miles N.W. Washington; scene of an indecisive battle between the Federal and Confederate armies, 17th Sept. 1862.

Antifriction Metal, a name given to various alloys of tin, zinc, copper, antimony, lead, &c., which oppose little resistance to motion, with great resistance to the effects of friction, so far as concerns the wearing away of the surfaces of contact. Babbitt's metal (50 parts tin, 5 antimony, 1 copper) is one of them.

Antigone (an-tig'o-nē), in Greek mythol. the daughter of Œdipus and Jocasta, celebrated for her devotion to her father and to her brother Polynices, for burying whom against the decree of King Creon she suffered death. She is heroine of Sophocles's *Œdipus at Colonus* and his *Antigone*.

Antig'onish, a town in the E. of Nova

ANTIGONUS — ANTIMONY.

Scotia, in county of the same name; the seat of a R. Catholic bishop, with a cathedral, a college, and a good harbour. Pop. 3500.

Antig'onus, one of the generals of Alexander the Great, born about 382 B.C. After the death of Alexander, Antigonus obtained Greater Phrygia, Lycia, and Pamphylia as his dominion. Ptolemy, Cassander, and Lysimachus, alarmed by his ambition, united themselves against him; and a long series of contests ensued in Syria, Phœnicia, Asia

Minor, and Greece, ending in 301 B.C. with the battle of Ipsus in Phrygia, in which Antigonus was defeated and slain.—**Antigonus Gon'atas**, son of Demetrius Poliorcētēs, and grandson of the above, succeeded his father in the Kingdom of Macedon and all his other European dominions; died after a reign of forty-four years B.C. 239.

Antigua (an-tē'ga), one of the British West Indies, the most important of the Leeward group; 28 miles long, 20 broad; area, 108 square miles. Discovered by Co-



St. John, Antigua, from the foreground of the Scotch Church.

lumbus, 1493. Its shores are high and rocky; the surface is varied and fertile. The capital, St. John, the residence of the governor of the Leeward Islands, stands on the shore of a well-sheltered harbour in the north-west part of the island. The staple articles of export are sugar, molasses, rum. Pop. (including Barbuda), 1891, 36,819.

Anti-Jac'obin, a famous magazine (1797-1818), the original object of which was to satirize the Jacobin principles of the Fox section of Whigs; principal contributors: Gifford, Canning, Frere, and Ellis.

Anti-Lebanon, the eastern of the two parallel ranges known as the Mountains of Lebanon in Palestine.

Antilegom'ena (things spoken against or objected to), a term applied by early Christian writers to the Epistle of the Hebrews, 2 Peter, James, Jude, 2 and 3 John, and the Apocalypse, which, though read in the churches, were not received into the canon of Scripture.

Antilles (an-til'ez), another name for the West Indian Islands.

Antimacass'ar, a covering for chairs, sofas, couches, &c., made of open cotton or worsted work, to preserve them from being soiled, as by the oil applied to the hair.

Antimachus (an-tim'a-kus), a Greek poet who lived about 400 B.C., and wrote an epic called the Thebais, and a long elegy called Lydē, inspired by a mistress of that name; only fragments of his writings remain.

An'timony (chemical sym. Sb, from L. *stibium*; sp. gr. 6·7, atomic wt. 122·3), a brittle metal of a bluish-white or silver-white colour and a crystalline or laminated structure. It melts at 842° F., and burns with a bluish-white flame. The mineral called stibnite or antimony-glance, is a trisulphide (Sb₂S₃), and is the chief ore from which the metal is obtained. It is found in many places, including France, Spain, Hungary, Italy, Canada, Australia, and Borneo. The metal, or, as it was formerly called, the

regulus of antimony, does not rust or tarnish when exposed to the air. When alloyed with other metals it hardens them, and is therefore used in the manufacture of alloys, such as Britannia-metal, type-metal, and pewter. In bells it renders the sound more clear; it renders tin more white and sonorous as well as harder, and gives to printing types more firmness and smoothness. The salts of antimony are very poisonous. The protoxide is the active base of tartar emetic and James's powder, and is justly regarded as a most valuable remedy in many diseases.—*Yellow antimony* is a preparation of antimony of a deep yellow colour, used in enamel and porcelain painting. It is of various tints, and the brilliancy of the brighter hues is not affected by foul air.

Antino'mianism ('opposition to the law'), the name given by Luther to the inference drawn by John Agricola from the doctrine of justification by faith, that the moral law is not binding on Christians as a rule of life. The term antinomian has since been applied to all doctrines and practices which seem to condemn or discountenance strict moral obligations. The Lutherans and Calvinists have both been charged with antinomianism, the former on account of their doctrine of justification by faith, the latter both on this ground and that of the doctrine of predestination. The charge is, of course, vigorously repelled by both.

Antin'omy, the opposition of one law of rule to another law or rule; in the Kantian philosophy, that natural contradiction which results from the law of reason, when, passing the limits of experience, we seek to conceive the complex of external phenomena, or nature, as a world or cosmos.

Antinous (an-tin'o-us), a young Bithynian whom the extravagant love of Hadrian has immortalized. He drowned himself in the Nile in 122 A.D. Hadrian set no bounds to his grief for his loss. He gave his name to a newly-discovered star, erected temples in his honour, called a city after him, and caused him to be adored as a god throughout the empire. Statues, busts, &c., of him are numerous.

Antioch (an'ti-ok: anciently, *Antiochi'a*), a famous city of ancient times, the capital of the Greek kings of Syria, on the left bank of the Orontes, about 21 miles from the sea, in a beautiful and fertile plain; founded by Seleucus Nicator in 300 B.C., and named after his father Antiochus. In Roman times it was the seat of the Syrian governors, and

the centre of a widely-extended commerce. It was called the 'Queen of the East' and 'The Beautiful.' Antioch is frequently mentioned in the New Testament, and it was here that the disciples of our Saviour were first called Christians (Acts xi. 26). In the first half of the seventh century it was taken by the Saracens, and in 1098 by the Crusaders. They established the principality of Antioch, of which the first ruler was Bohemond, and which lasted till 1268, when it was taken by the Mameluke Sultan of Egypt. In 1516 it passed into the hands of the Turks. The modern Antioch, or *Antakieh*, occupies but a small portion of the site of the ancient Antioch. Pop. est. 10,000.—There was another Antioch, in Pisidia, at which Paul preached on his first missionary journey.

Antiochus (an-ti'o-kus), a name of several Græco-Syrian kings of the dynasty of the Seleucidæ. **Antiochus I.**, called *Sōtēr* ('saviour'), was son of Seleucus, general of Alexander the Great, and founder of the dynasty. He was born about B.C. 324, and succeeded his father in B.C. 280. During the greater part of his reign he was engaged in a protracted struggle with the Gauls who had crossed from Europe, and by whom he was killed in battle B.C. 261.—**Antiochus II.**, surnamed *Theos* (god), succeeded his father, lost several provinces by revolt, and was murdered in B.C. 246 by Laodicē, his wife, whom he had put away to marry Berenicē, daughter of Ptolemy.—**Antiochus III.**, surnamed the *Great*, grandson of the preceding, was born B.C. 242, succeeded in B.C. 223. The early part of his reign embraced a series of wars against revolted provinces and neighbouring kingdoms, his expeditions extending to India, over Asia Minor, and latterly into Europe, where he took possession of the Thracian Chersonese. Here he encountered the Romans, who had conquered Philip V. of Macedon, and were prepared to resist his further progress. Antiochus gained an important adviser in Hannibal, who had fled for refuge to his court; but he lost the opportunity of an invasion of Italy while the Romans were engaged in war with the Gauls, of which the Carthaginian urged him to avail himself. The Romans defeated him by sea and land, and he was finally overthrown by Scipio at Mount Sipylus, in Asia Minor, B.C. 190, and very severe terms were imposed upon him. He was killed while plundering a temple in Elymais to procure money to pay the Romans.—**Anti-**

ochus IV., called *Epiphānes*, youngest son of the above, is chiefly remarkable for his attempt to extirpate the Jewish religion, and to establish in its place the polytheism of the Greeks. This led to the insurrection of the Maccabees, by which the Jews ultimately recovered their independence. He died B.C. 164.

Antioquia (ān-tē-ō-kē'ā), a town of South America, in Colombia, on the river Cauca; founded in 1542. Pop. 10,000. It gives name to a department of the republic; area,

22,316 sq. miles; pop. 470,000. Capital, Medellin.

Antipædobaptist, one who is opposed to the doctrine of infant baptism.

Antip'aros (anc. *Oliāros*), one of the Cyclades Islands in the Grecian Archipelago, containing a famous stalactitic grotto or cave. It lies south-west of Paros, from which it is separated by a narrow strait, and has an area of 10 square miles, and about 500 inhabitants.

Antip'ater, a general and friend of Philip



Medal of Antiochus Epiphanes.



of Macedon, father of Alexander the Great. On the death of Alexander, in 323 B.C., the regency of Macedonia was assigned to Antipater, who succeeded in establishing the Macedonian rule in Greece on a firm footing. He died in B.C. 317 at an advanced age.

Antip'athy, a special dislike exhibited by individuals to particular objects or persons, usually resulting from physical or nervous organization. An antipathy is often an unaccountable repugnance to what people in general regard with no particular dislike, as certain sounds, smells, articles of food, &c., and it may be manifested by fainting or extreme discomfort.

Antiphlogis'tic, a term applied to medicines or methods of treatment that are intended to counteract inflammation, such as bloodletting, purgatives, diaphoretics, &c.

An'tiphon, a Greek orator, born near Athens; founder of political oratory in Greece. His orations are the oldest extant, and he is said to have been the first who wrote speeches for hire. He was put to death for taking part in the revolution of B.C. 411, which established the oligarchic government of the Four Hundred.

Antiphon, **Antiph'ony** ('alternate song'), in the Christian church a verse first sung by a single voice, and then repeated by the

whole choir; or any piece to be sung by alternate voices.

Antipodes (an-tip'o-dēz), the name given relatively to people or places on opposite sides of the earth, so situated that a line drawn from one to the other passes through the centre of the earth and forms a true diameter. The longitudes of two such places differ by 180°. The difference in their time is about twelve hours, and their seasons are reversed.

Antipodes Islands, a group of small uninhabited islands in the South Pacific Ocean, about 460 miles S.E. by E. of New Zealand; so called from being nearly antipodal to Greenwich. Antipodes Island rises to 1300 feet, and is largely covered with coarse grass; huts have recently been fitted up to shelter castaways.

An'tipope, the name applied to those who at different periods have produced a schism in the Roman Catholic Church by opposing the authority of the pope, under the pretence that they were themselves popes. The Roman Church cannot admit that there ever existed two popes; but the fact is, that in several cases both competitors for the papal chair (sometimes there were three or even four) were equally popes; that is to say, the claims of all were equally good. Each was frequently supported by

whole nations, and the schism was nothing but the struggle of political interests, which induced particular governments to support a pope against the pope supported by other governments. The greatest schism of this kind lasted for fifty years—1378-1429.

Antiquaries, those devoted to the study of ancient times through their relics, as old places of sepulchre, remains of ancient habitations, early monuments, implements or weapons, statues, coins, medals, paintings, inscriptions, books, and manuscripts, with the view of arriving at a knowledge of the relations, modes of living, habits, and general condition of the people who created or employed them. Societies or associations of antiquaries have been formed in all countries of European civilization. In Britain the Society of Antiquaries of London was founded in 1572, revived in 1717, and incorporated in 1751. The Society of Antiquaries of Scotland was founded in 1780, incorporated in 1783, and has the management of a large national antiquarian museum in Edinburgh.

Antiques (an-tēks'), a term specifically applied to the remains of ancient art, as statues, paintings, vases, cameos, and the like, and more especially to the works of Grecian and Roman antiquity.

Antirrhinum (an-ti-rīnum), a genus of annual or perennial plants of the natural order Scrophulariaceæ, commonly known as *snapdragon*, on account of the peculiarity of the blossoms, which, by pressing between the finger and thumb, may be made to open and shut like a mouth.

Antisana (än-tē-sä'nä), a volcano in the Andes of Ecuador, 35 miles S.E. by E. Quito. Whymper, who ascended it in 1880, makes its height 19,260 feet.

Antis'cians (Gr. *anti*, over against, *skia*, a shadow), those who live under the same meridian, at the same distance N. and S. of the equator, and whose shadows at noon consequently are thrown in contrary directions.

Antiscorbu'tics, remedies against scurvy. Lemon-juice, ripe fruit, milk, salts of potash, green vegetables, potatoes, fresh meat, and raw or lightly boiled eggs, are some of the principal antiscorbutics. See *Scurvy*.

Antisep'tic (Gr. *anti*, against, and *sēpein*, to rot), an agent by which the putrefaction of vegetable or animal matters is prevented or arrested. There are a great number of substances having this preservative property, among which are salt, alcohol, vege-

table charcoal, creosote, corrosive sublimate, tannic acid, sulphurous acid, sulphuric ether, chloroform, arsenic, wood-spirit, aloes, camphor, benzine, aniline, &c. The packing of fish in ice, and the curing of herring and other fish with salt, are familiar antiseptic processes. The different antiseptics act in different ways. The term is applied in a specific manner to that mode of treatment in surgery by which air is excluded from wounds, or allowed access only through substances capable of destroying the germs in the atmosphere, on whose presence supuration is assumed to depend.

Antispasmod'ic, a medicine proper for the cure of spasms and convulsions; such belong largely to the class of ethers, as sulphuric ether, chloric ether, nitric ether, &c.

Antisthenes (an-tis'the-nēz), a Greek philosopher and the founder of the school of Cynics, born at Athens about B.C. 444. He was a disciple of Socrates.

Antis'trophe. See *Strophe*.

Antitaurus. See *Taurus*.

Antith'esis (opposition), a figure of speech consisting in a contrast or opposition of words or sentiments; as, 'When our vices leave us, we flatter ourselves we leave them;' 'The prodigal robs his heir, the miser robs himself.'

Anti-Toxin (e), a complex substance formed by injecting the culture of the virulent bacillus of diphtheria into the circulation of the horse and taking the serum of the blood of the animal from the jugular vein. The serum is preservative and therapeutic when applied both to the toxin and also against the living virus, hence its name. Anti-Toxin has an immediate effect as an antidiphtheritic. Behring was the first to use it, and Roux, who established its virtues, candidly acknowledges him as its discoverer.

Anti-trade, a name given to any of the upper tropical winds which move northward or southward in the same manner as the trade-winds which blow beneath them in the opposite direction. These great aerial currents descend to the surface after they have passed the limits of the trade-winds, and form the south-west or west-south-west winds of the north temperate, and the north-west or west-north-west winds of the south temperate zones.

Antitrinita'rians, all who do not receive the doctrine of the divine Trinity, or the existence of three persons in the Godhead; especially applied to those who oppose such

a doctrine on philosophical grounds, as contrasted with Unitarians, who reject the doctrine as not warranted by Scripture.

An'titype, that which is correlative to a type; by theological writers the term is employed to denote the reality of which a type is the prophetic symbol.

An'tium, in ancient Italy, one of the most ancient and powerful cities of Latium, the chief city of the Volsci, and often at war with the Romans, by whom it was finally taken in 338 B.C. It was 38 miles distant from Rome, a flourishing seaport, and became a favourite residence of the wealthy Romans. It was destroyed by the Saracens; but vestiges of it remain at Porto d'Anzo, near which many valuable works of art have been found.

Antivari (ân-tē'vā-rē), a seaport town on the eastern shore of the Adriatic, ceded to Montenegro by the Treaty of Berlin (1878). Pop. about 6000.

Antlers, the horns of the deer tribe, or the snags or branches of the horns. See *Deer*.

Ant-lion, the larva of a Neuropterous insect (*Myrmelëon formicārius*), which in its perfect state greatly resembles a dragon-fly; curious on account of its ingenious method of catching the insects—chiefly ants—on which it feeds. It digs a funnel-shaped hole in the driest and finest sand it can find, and when the pit is deep enough,



Perfect Insect (*Myrmelëon formicārius*) and Larva (ant-lion).

and the sides are quite smooth and sloping, it buries itself at the bottom with only its formidable mandibles projecting, and waits till some luckless insect stumbles over the edge, when it is immediately seized, its juices sucked, and the dead body jerked from the hole.

Antofagas'ta, a Chilian seaport on the Bay of Morena, and a territory of the same name recently taken from Bolivia. The

territory has an area of 60,988 sq. miles, and a population of 21,213. The port is connected by railway with the silver mines of Caracoles, and exports silver, copper, cubic nitre, &c. Pop. 7946.

Antoinette (ân-twā-net), **MARIE** (Marie Antoinette Joseph Jeanne de Lorraine),



Marie Antoinette.

Archduchess of Austria and Queen of France, the youngest daughter of the Emperor Francis I. and of Maria Theresa, was born at Vienna, 2d November, 1755; executed at Paris, 16th Oct. 1793. She was married at the age of fifteen to the Dauphin, afterwards Louis XVI., but her manners were ill-suited to the French court, and she made many enemies among the highest families by her contempt for its ceremonies, which excited her ridicule. The freedom of her manners, indeed, even after she became queen, was a cause of scandal. The extraordinary affair of the diamond necklace, in which the Cardinal Louis de Rohan, the great quack Cagliostro, and a certain Countess de Lamotte were the chief actors, tarnished her name, and added force to the calumnies against her. Though it was proved in the examination which she demanded that she had never ordered the necklace, her enemies succeeded in casting a stigma on her, and the credulous people laid every public disaster to her charge. There is no doubt she had great influence over the king, and that she constantly opposed all measures of reform. The en-

thusiastic reception given her at the guards' ball at Versailles on 1st October, 1789, raised the general indignation to the highest pitch, and was followed in a few days by the insurrection of women, and the attack on Versailles. When practically prisoners in the Tuileries it was she who advised the flight of the royal family in June, 1791, which ended in their capture and return. On 10th August, 1792, she heard her husband's deposition pronounced by the Legislative Assembly, and accompanied him to the prison in the Temple, where she displayed the magnanimity of a heroine and the patient endurance of a martyr. In January, 1793, she parted with her husband who had been condemned by the Convention; in August she was removed to the Conciergerie; and in October she was charged before the revolutionary tribunal with having dissipated the finances, exhausted the treasury, corresponded with the foreign enemies of France, and favoured the domestic foes of the country. She defended herself with firmness, decision, and indignation; and heard the sentence of death pronounced with perfect calmness—a calmness which did not forsake her when the sentence was carried out the following morning. Her son, eight years of age, died shortly afterwards, as was generally believed by poison, and her daughter was suffered to quit France, and afterwards married her cousin the Duke of Angoulême.

Antommarchi (-mär'kē), CARLO FRANCESCO, Italian physician, born in Corsica in 1780, died in Cuba 1838. He was professor of anatomy at Florence when he offered himself as physician of Napoleon at St. Helena. Napoleon at first received him with reserve, but soon admitted him to his confidence, and testified his satisfaction with him by leaving him a legacy of 100,000 francs. On his return to Europe he published the *Derniers Moments de Napoléon* (two vols. 8vo, 1823).

Antonell'i, GIACOMO, cardinal, born 1806, died 1876. He was educated at the Grand Seminary of Rome, where he attracted the attention of Pope Gregory XVI., who appointed him to several important offices. On the accession of Pius IX. in 1846 Antonelli was raised to the dignity of cardinal-deacon; two years later he became president and minister of foreign affairs, and in 1850 was appointed secretary of state. During the sitting of the Œcumenical Council (1869–70) he was a prominent champion of

the papal interest. He strongly opposed the assumption of the united Italian crown by Victor Emanuel.

Antonell'o (of Messina), an Italian painter who died in the end of the sixteenth century, and is said to have introduced oil-painting into Italy (at Venice), having been instructed in it by John Van Eyck.

Antoni'nus, ITINERARY OF. See *Itinerary*.

Antoni'nus, MARCUS AURELIUS. See *Aurelius*.

Antoni'nus, WALL OF, a barrier erected by the Romans across the isthmus between the Forth and the Clyde, in the reign of Antoninus Pius. Its western extremity was at or near Dunglass Castle, its eastern at Carridon, and the whole length of it exceeded 27 miles. It was constructed A.D. 140 by Lollius Urbicus, the imperial legate, and consisted of a ditch 40 feet wide and 20 feet deep, and a rampart of stone and earth on the south side 24 feet thick and 20 feet in height. It was strengthened at each end and along its course by a series of forts and watch-towers. It may still be traced at various points, and is commonly known as *Graham's Dyke*.

Antoni'nus Pius, TITUS AURELIUS FULVUS, Roman emperor, was born at Lavinium, near Rome, A.D. 86, died A.D. 161. In A.D. 120 he became consul, and he was one of the four persons of consular rank among whom Hadrian divided the supreme administration of Italy. He then went as proconsul to Asia, and after his return to Rome became more and more the object of Hadrian's con-



Coin of Antoninus Pius.

confidence. In A.D. 138 he was selected by that emperor as his successor, and the same year he ascended the throne. The persecutions of the Christians he speedily abolished. He carried on but a few wars. In Britain he extended the Roman dominion, and by raising a new wall (see preceding art.) put a stop to the invasions of the Picts and Scots. The senate gave him the surname *Pius*, that is, dutiful or showing filial affection, because to keep alive the memory of Hadrian he had built

a temple in his honour. He was succeeded by Marcus Aurelius, his adopted son.

Anto'nius, MARCUS (MARK ANTONY), Roman triumvir, born 83 B.C., was connected with the family of Cæsar by his mother. Debauchery and prodigality marked his youth. To escape his creditors he went to Greece in 58, and from thence followed the consul Gabinus on a campaign in Syria as commander of the cavalry. He served in Gaul under Cæsar in 52 and 51. In 50 he returned to Rome to support the interests of Cæsar against the aristocratical party headed by Pompey, and was appointed tribune. When war broke out between Cæsar and Pompey, Antony led reinforcements to Cæsar in Greece, and in the battle of Pharsalia he commanded the left wing. He afterwards returned to Rome with the appointment of master of the horse and governor of Italy (47). In B.C. 44 he became Cæsar's colleague in the consulship. Soon after Cæsar was assassinated, and Antony would have shared the same fate had not Brutus stood up in his behalf. Antony, by the reading of Cæsar's will, and by the oration which he delivered over his body, excited the people to anger and revenge, and the murderers were obliged to flee. After several quarrels and reconciliations with Octavianus, Cæsar's heir (see *Augustus*), Antony departed to Cisalpine Gaul, which province had been conferred upon him against the will of the senate. But Cicero thundered against him in his famous Philippics; the senate declared him a public enemy, and intrusted the conduct of the war against him to Octavianus and the consuls Hirtius and Pansa. After a campaign of varied fortunes Antony fled with his troops over the Alps. Here he was joined by Lepidus, who commanded in Gaul, and through whose mediation Antony and Octavianus were again reconciled. It was agreed that the Roman world should be divided among the three conspirators, who were called triumvirs. Antony was to take Gaul; Lepidus, Spain; and Octavianus, Africa and Sicily. They decided upon the proscription of their mutual enemies, each giving up his friends to the others, the most celebrated of the victims being Cicero the orator. Antony and Octavianus departed in 42 for Macedonia, where the united forces of their enemies, Brutus and Cassius, formed a powerful army, which was, however, speedily defeated at Philippi. Antony next visited Athens, and thence proceeded

to Asia. In Cilicia he ordered Cleopatra, queen of Egypt, to apologize for her insolent behaviour to the triumviri. She appeared in person, and her charms fettered him for ever. He followed her to Alexandria, where he bestowed not even a thought upon the affairs of the world, till he was aroused by a report that hostilities had commenced in Italy between his own relatives and Octavianus. A short war followed, which was decided in favour of Octavianus before the arrival of Antony in Italy. A reconciliation was effected, which was sealed by the marriage of Antony with Octavia, the sister of Octavianus. A new division of the Roman dominions was now made (in 40), by which Antony obtained the East, Octavianus the West. After his return to Asia Antony gave himself up entirely to Cleopatra, assuming the style of an eastern despot, and so alienating many of his adherents and embittering public opinion against him at Rome. At length war was declared at Rome against the Queen of Egypt, and Antony was deprived of his consulship and government. Each party assembled its forces, and Antony lost, in the naval battle at Actium (B.C. 31), the dominion of the world. He followed Cleopatra to Alexandria, and on the arrival of Octavianus his fleet and cavalry deserted, and his infantry was defeated. Deceived by a false report which Cleopatra had disseminated of her death, he fell upon his own sword (B.C. 30).

Antonoma'sia, in rhetoric, the use of the name of some office, dignity, profession, science, or trade instead of the true name of the person, as when *his majesty* is used for a king, *his lordship* for a nobleman; or when, instead of Aristotle, we say, *the philosopher*; or, conversely, the use of a proper noun instead of a common noun; as, a *Solomon* for a wise man.

Antony, MARK. See *Antonius (Marcus)*.

Antony, St. See *Anthony*.

An'trim, a county of Ireland, province of Ulster, in the north-east of the island; area, 762,080 acres, of which about a third are arable. The eastern and northern districts are comparatively mountainous, with tracts of heath and bog, but no part rises to a great height. The principal rivers are the Lagan and the Bann, which separate Antrim from Down and Londonderry respectively. The general soil of the plains and valleys is strong loam. Flax, oats, and potatoes are the principal agricultural produce. Cattle,

sheep, swine, and goats are extensively reared. There are salt-mines and beds of iron-ore, which is worked and exported. A range of basaltic strata stretches along the northern coast, of which the celebrated Giant's Causeway is the most remarkable portion. The spinning of linen and cotton yarn, and the weaving of linen and cotton, are the staple manufactures. The principal towns are Belfast, Ballymena, and Larne. Many of the inhabitants are Presbyterians, being the descendants of Scottish immigrants of the seventeenth century. The county sends four members to parliament. Pop. 427,968.—The town of Antrim, at the north end of Lough Neagh, is a small place with a pop. of 2020.

Ant-thrush, a name given to certain passerine or perching birds having resemblances to the thrushes and supposed to feed largely on ants. They all have longish legs and a short tail. The ant-thrushes of the Old World belong to the genus *Pitta*. They inhabit southern and south-eastern Asia and the Eastern Archipelago, and are birds of brilliant plumage. The New World ant-thrushes belong to South America, and live among close foliage and bushes. Some of them are called ant shrikes and ant-wrens. They belong to several genera.

Ant'werp (Dutch and Ger. *Antwerpen*, French, *Anvers*), the chief port of Belgium, and the capital of a province of the same name, on the Scheldt, about 50 miles from the open sea. It is strongly fortified, being completely surrounded on the land side by a semicircular inner line of fortifications,

the defences being completed by an outer line of forts and outworks. The cathedral, with a spire 400 feet high, one of the largest and most beautiful specimens of Gothic architecture in Belgium, contains Rubens's celebrated masterpieces, the Descent from the Cross, the Elevation of the Cross, and The Assumption. The other churches of note are St. James's, St. Andrew's, and St.

Paul's, all enriched with paintings by Rubens, Van-dyck, and other masters. Among the other edifices of note are the exchange, the town-hall, the palace, theatre, academy of the fine arts, picture and sculpture galleries, &c. The harbour accommodation is extensive and excellent, new docks and quays having been built in the past few years. The shipping trade has greatly advanced in recent times, and is now very large, the goods being largely in transit. There



Antwerp Cathedral, from the Egg Market.

are numerous and varied industries. Antwerp is mentioned as early as the eighth century, and in the eleventh and twelfth it had attained a high degree of prosperity. In the sixteenth century it is said to have had a pop. of 200,000. The wars between the Netherlands and Spain greatly injured its commerce, which was almost ruined by the closing of the navigation of the Scheldt in accordance with the peace of Westphalia (1648). It is only in the present century that its prosperity has revived. Pop. 1891, 232,723.—The province consists of a fertile plain 1100 square miles in area, and has a population of 713,740.

Anu'bis (*Anepo* on the monuments), one of the deities of the ancient Egyptians, the

son of Osiris by Isis. The Egyptian sculptures represent him with the head, or under the form, of a jackal, with long pointed ears. His office was to conduct the souls of the dead from this world to the next, and in the lower world he weighed the actions of the deceased previous to their admission to the presence of Osiris.

Anúpsahr (*a-nöp'shär*), a town of Hindustan, N. W. Provinces, on the Ganges, 75 miles S.E. of Delhi, a resort of Hindu pilgrims who bathe in the Ganges. Pop. 8234.

Anu'ra, or **AN-OU'RA** (Gr. *a*, negative, *oura*, a tail), an order of Batrachians which lose the tail when they reach maturity, such as the frogs and toads.

Anuradhapura. See *Anarajapura*.

A'nus, the opening at the lower or posterior extremity of the alimentary canal through which the excrement or waste products of digestion are expelled.

An'vil, an instrument on which pieces of metal are laid for the purpose of being hammered. The common smith's anvil is generally made of seven pieces, namely, the core or body; the four corners for the purpose of enlarging its base; the projecting end, which contains a square hole for the reception of a set or chisel to cut off pieces of iron; and the beak or conical end, used for turning pieces of iron into a circular form, &c. These pieces are each separately welded to the core and hammered so as to form a regular surface with the whole. When the anvil has received its due form, it is faced with steel, and is then tempered in cold water. The smith's anvil is generally placed loose upon a wooden block. The anvil for heavy operations, such as the forging of ordnance and shafting, consists of a huge iron block deeply embedded, and resting on piles of masonry.

Anville, **JEAN BAPTISTE BOURGUIGNON D'** (*jän báp-těst bör-gē-nyōn dän-vēl*), a celebrated French geographer, born 1697,



Anubis.

died 1782; published a great number of maps and writings illustrative of ancient and modern geography.

Anzin (*än-zän*), a town of France, department of Nord, about 1 mile north-west from Valenciennes, in the centre of an extensive coal-field, with blast-furnaces, forges, rolling-mills, foundries, &c. Pop. 10,043.

Aonia, in ancient geography a name for part of Bœotia in Greece, containing Mount Helicon and the fountain Aganippe, both haunts of the muses.

A'orist, the name given to one of the tenses of the verb in some languages (as the Greek), which expresses indefinite past time.

Aor'ta, in anatomy, the great artery or trunk of the arterial system, proceeding from the left ventricle of the heart, and giving origin to all the arteries except the pulmonary. It first rises towards the top of the breast-bone, when it is called the *ascending aorta*; then makes a great curve, called the transverse or *great arch of the aorta*, whence it gives off branches to the head and upper extremities; thence proceeding towards the lower extremities, under the name of the *descending aorta*, it gives off branches to the trunk; and finally divides into the two iliacs, which supply the pelvis and lower extremities.

Aosta (*ä-os'tä*; anc. *Augusta Prætorin*), a town of north Italy, 50 miles N.N.W. of Turin, on the Dora-Baltea, with an ancient triumphal arch, remains of an amphitheatre, &c. Pop. 7830.

Aoudad (*a-ö'dad*), the *Ammotrægus tragelaphus*, a quadruped allied to the sheep, most closely to the mouflon, from which, however, it may be easily distinguished by the heavy mane, commencing at the throat and falling as far as the knees. It is a native of North Africa, inhabiting the loftiest and most inaccessible precipices.

Apaches (*ä-pä'chez*), a warlike race of Indians inhabiting the more unsettled parts of the United States adjoining Mexico, and also the north of Mexico. They live chiefly on horseback, support themselves by the chase and plunder, and they still maintain their independence and hostility to the whites.

Ap'anage, an allowance which the younger princes of a reigning house in some European countries receive from the revenues of the country, generally together with a grant of public domains, that they may be enabled to live in a manner becoming their rank.

Apartment houses, houses built to accom-

moderate a number of families each in its own set of rooms, which form a separate dwelling with an entrance of its own. The term is chiefly used in America, where such dwellings are of comparatively recent introduction; but houses of this kind have long been built in Europe, though in London, as in the United States, they are still somewhat of a novelty. In New York and other American cities there are now great blocks of such houses, which provide excellent and commodious dwellings at a lower rent than if each were a separate building.

Ap'atite, a translucent but seldom transparent mineral, which crystallizes in a regular six-sided prism, usually terminated by a truncated six-sided pyramid. It passes through various shades of colour, from white to yellow, green, blue, and occasionally red, scratches fluor-spar but is scratched by felspar, and has a specific gravity of about 3.5. It is a compound of phosphate of lime with fluoride and chloride of calcium. It occurs principally in primitive rocks and in veins, extensive deposits being found in all parts of the world. It is now largely utilized as a source of artificial phosphate manures.

Ape, a common name of a number of quadrumanous animals inhabiting the Old World (Asia and the Asiatic islands, and Africa), and including a variety of species. The word *ape* was formerly applied indiscriminately to all quadrumanous mammals; but it is now limited to the anthropoid or man-like monkeys. The family includes the chimpanzee, gorilla, orang-outang, &c., and has been divided into three genera, *Troglodytes*, *Simia*, and *Hylobates*. See *Chimpanzee*, *Gibbon*, *Gorilla*, *Orang*, &c.

Apeldoorn (ä'pel-dörn), a town of Holland, province of Guelderland, 17 miles north of Arnhem; manufactures paper, morocco leather, and copper-plates. Pop. 12,411.

Apelles (a-pel'ēz), the most famous of the painters of ancient Greece and of antiquity, was born in the fourth century B.C., probably at Colophon. Ephorus of Ephesus was his first teacher, but attracted by the renown of the Sicyonian school he went and studied at Sicyon. In the time of Philip he went to Macedonia, and there a close friendship between him and Alexander the Great was established. The most admired of his pictures was that of Venus rising from the sea and wringing the water from her dripping locks. His portrait of Alexander with a

thunderbolt in his hand was no less celebrated. His renown was at its height about B.C. 330, and he died about the end of the century. Among the anecdotes told of Apelles is the one which gave rise to the Latin proverb, 'Ne sutor supra crepidam' — 'Let not the shoemaker go beyond his shoe.' Having heard a cobbler point out an error in the drawing of a shoe in one of his pictures he corrected it, whereupon the cobbler took upon him to criticise the leg, and received from the artist the famous reply.

Ap'ennines (Latin, *Mons Apenninus*), a prolongation of the Alps, forming the 'backbone of Italy.' Beginning at Savona, on the Gulf of Genoa, the Apennines traverse the whole of the peninsula and also cross over into Sicily, the Strait of Messina being regarded merely as a gap in the chain. The average height of the mountains composing the range is about 4000 feet, and nowhere do they reach the limits of perpetual snow, though some summits exceed 9000 feet in height. Monte Corno, called also Gran Sasso d'Italia (Great Rock of Italy), which rises among the mountains of the Abruzzi, is the loftiest of the chain, rising to the height of 9541 feet, Monte Majella (9151) being next. Monte Garzano, which juts out into the Adriatic from the *ankle* of Italy, is a mountainous mass upwards of 5000 feet high, completely separated from the main chain. On the Adriatic side the mountains descend more abruptly to the sea than on the western or Mediterranean side, and the streams are comparatively short and rapid. On the western side are the valleys of the Arno, Tiber, Garigliano, and Volturno, the largest rivers that rise in the Apennines, and the only ones of importance in the peninsular portion of Italy. They consist almost entirely of limestone rocks, and are exceedingly rich in the finest marbles. On the south slopes volcanic masses are not uncommon. Mount Vesuvius, the only active volcano on the continent of Europe, is an instance. The lower slopes are well clothed with vegetation, the summits are sterile and bare.

Apenrade (ä'pen-rä-de), a seaport of Prussia, in Schleswig-Holstein, on a fiord of the Little Belt, beautifully situated, and carrying on a considerable fishing and seafaring trade. Pop. 6212.

Ape'rient, a medicine which, in moderate doses, gently but completely opens the

bowels: examples, castor-oil, Epsom salts, senna, &c.

Apet'alous, a botanical term applied to flowers or flowering-plants which are destitute of petals or corolla.

Aphanip'tera, an order of wingless insects, composed of the different species of fleas. See *Flea*.

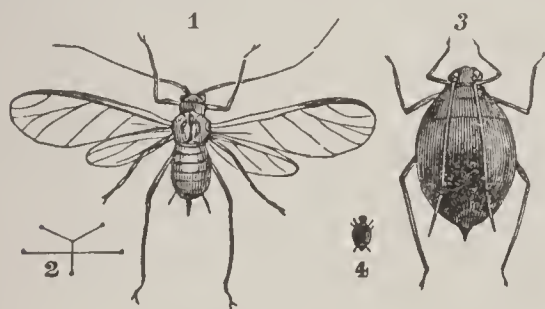
Apha'sia (Gr. *a*, not, and *phasis*, speaking), in pathology, a symptom of certain morbid conditions of the nervous system, in which the patient loses the power of expressing ideas by means of words, or loses the appropriate use of words, the vocal organs the while remaining intact and the intelligence sound. There is sometimes an entire loss of words as connected with ideas, and sometimes only the loss of a few. In one form of the disease, called *aphemia*, the patient can think and write, but cannot speak; in another, called *agraphia*, he can think and speak, but cannot express his ideas in writing. In a great majority of cases, where post-mortem examinations have been made, morbid changes have been found in the left frontal convolution of the brain.

Aphe'lion (Gr. *apo*, from, and *hēlios*, the sun), that part of the orbit of the earth or any other planet in which it is at the point remotest from the sun.

Aphe'mia. See *Aphasia*.

Aphides (af'i-dēz). See *Aphis*.

Aphis, a genus of insects (called plant-lice) of the order Hemiptera, the type of the family Aphidēs. The species are very



Aphides.

Wheat Plant-louse (*Aphis granaria*).—1, 2, Male, enlarged and natural size. 3, 4, Wingless Female, enlarged and natural size.

numerous and destructive. The *A. rosæ* lives on the rose; the *A. fabæ* on the bean; the *A. humuli* is injurious to the hop, the *A. granaria* to cereals, the *A. lanigera* or woolly aphid equally so to apple-trees. The aphides are furnished with an inflected beak, and feelers longer than the thorax. In the same species some individuals have four erect wings and others

are entirely without wings. The feet are of the ambulatory kind, and the abdomen usually ends in two horn-like tubes, from which is ejected the substance called honey-dew, a favourite food of ants. (See *Ant*.) The aphides illustrate parthenogenesis; hermaphrodite forms produced from eggs produce viviparous wingless forms, which again produce others like themselves, and thus multiply during summer, one individual giving rise to millions. Winged sexual forms appear late in autumn, the females of which, being impregnated by the males, produce eggs.

Apho'nia (Gr. *a*, not, and *phōnē*, voice), in pathology, the greater or less impairment, or the complete loss of the power of emitting vocal sound. The slightest and less permanent forms often arise from extreme nervousness, fright, and hysteria. Slight forms of structural aphonia are of a catarrhal nature, resulting from more or less congestion and tumefaction of the mucous and submucous tissues of the larynx and adjoining parts. Severer cases are frequently occasioned by serous infiltration into the submucous tissue, with or without inflammation of the mucous membrane of the larynx and of its vicinity. The voice may also be affected in different degrees by inflammatory affections of the fauces and tonsils; by tumours in these situations; by morbid growths pressing on or implicating the larynx or trachea; by aneurisms; and most frequently by chronic laryngitis and its consequences, especially thickening, ulceration, &c.

Aph'orism, a brief, sententious saying, in which a comprehensive meaning is involved, as 'Familiarity breeds contempt;' 'Necessity has no law.'

Aphrodis'iacs, medicines or food believed to be capable of exciting sexual desire.

Aphrodite (af-ro-dī'tē), the goddess of love among the Greeks; usually regarded as equivalent to the Roman Venus. A festival called Aphrodisia was celebrated to her in various parts of Greece, but especially in Cyprus. See *Venus*.

Aphthæ (af'thē), a disease occurring especially in infants, but occasionally seen in old persons, and consisting of small white ulcers upon the tongue, gums, inside of the lips, and palate, resembling particles of curdled milk: commonly called *thrush* or *milk-thrush*.

A'pia, the chief place and trading centre of the Samoa Islands, on the north side of the island of Upolu.

A'piary (*L. apis*, a bee), a place for keeping bees. The apiary should be well sheltered from strong winds, moisture, and the extremes of heat and cold. The hives should face the south or south-east, and should be placed on shelves 2 feet above the ground, and about the same distance from each other. As to the form of the hives and the materials of which they should be constructed there are great differences of opinion. The old dome-shaped straw *skep* is still in general use among the cottagers of Great Britain. Its cheapness and simplicity of construction are in its favour, while it is excellent for warmth and ventilation; but it has the disadvantage that its interior is closed to inspection, and the honey can only be got out by stupefying the bees with the smoke of the common puff-ball or chloroform, or by fumigating with sulphur, which entails the destruction of the swarm. Wooden hives of square box-like form are now gaining general favour among bee-keepers. They usually consist of a large breeding chamber below and two sliding removable boxes called supers above for the abstraction of honey without disturbing the contents of the main chamber. It is of great importance that the apiary should be situated in the neighbourhood of good feeding grounds, such as gardens, clover-fields, or heath-covered hills. When their stores of honey are removed the bees must be fed during the winter and part of spring with syrup or with a solution consisting of 2 lbs. loaf-sugar to a pint of water. In the early spring slow and continuous feeding (a few ounces of syrup each day) will stimulate the queen to deposit her eggs, by which means the colony is rapidly strengthened and throws off early swarms. New swarms may make their appearance as early as May and as late as August, but swarming usually takes place in the intervening months.

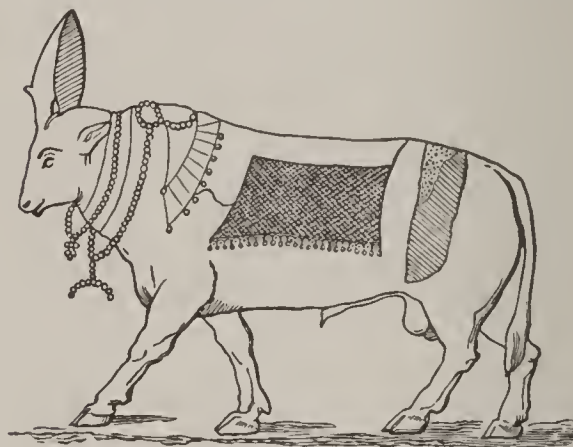
Apic'ius, MARCUS GABIVS, a Roman epicure in the time of Augustus and Tiberius, who, having exhausted his vast fortune on the gratification of his palate, and having only about £80,000 left, poisoned himself that he might escape the misery of plain diet. The book of cookery published under the name of Apicius was written by one Cælius, and belongs to a much later date.

A'pion, a Greek grammarian, born in Egypt, lived in the reigns of Tiberius, Caligula, and Claudius, A.D. 15-54, and went to Rome to teach grammar and rhetoric. Among his works, one or two

fragments only of which remain, was one directed against the Jews, which was replied to by Josephus.

A'pios, a genus of leguminous climbing plants, producing edible tubers on underground shoots. An American species (*A. tuberosa*) has been used as a substitute for the potato, but its tubers, though numerous, are small.

A'pis, a bull to which divine honours were paid by the ancient Egyptians, who regarded him as a symbol of Osiris. At Memphis he had a splendid residence, containing extensive walks and courts for his entertainment, and he was waited upon by a large train of



Apis.

priests, who looked upon his every movement as oracular. He was not suffered to live beyond twenty-five years, being secretly killed by the priests and thrown into a sacred well. Another bull, characterized by certain marks, as a black colour, a triangle of white on the forehead, a white crescent-shaped spot on the right side, &c., was selected in his place. His birthday was annually celebrated, and his death was a season of public mourning.

A'pis, a genus of insects. See *Bee*.

A'pium, a genus of umbelliferous plants, including celery.

Aplacen'tal, a term applied to those mammals in which the young are destitute of a placenta. The aplacental mammals comprise the Monotremata and Marsupialia, the two lowest orders of mammals, including the duck-mole (*ornithorhynchus*), the porcupine ant-eater, kangaroo, &c. See *Marsupialia* and *Monotremata*.

Aplanat'ic, in optics, a term specifically applied to reflectors, lenses, and combinations of them, capable of transmitting light without spherical aberration. An *aplanatic lens* is a lens constructed of different media

to correct the effects of the unequal refrangibility of the different rays.

Aplysia. See *Sea-hare*.

Apoc'alyptse (Gr. *apokalypsis*, a revelation), the name frequently given to the last book of the New Testament, in the English version called The Revelation of St. John the Divine. It is generally believed that the Apocalypse was written by the apostle John in his old age (95–97 A.D.) in the Isle of Patmos, whither he had been banished by the Roman Emperor Domitian. Anciently its genuineness was maintained by Justin Martyr, Irenæus, Clement of Alexandria, Tertullian, and many others; while it was doubted by Dionysius of Alexandria, Cyril of Jerusalem, Chrysostom, and, nearer our own times, by Luther and a majority of the eminent German commentators. The Apocalypse has been explained differently by almost every writer who has ventured to interpret it, and has furnished all sorts of sects and fanatics with quotations to support their creeds or pretensions. The modern interpreters may be divided into three schools — namely, the *historical school*, who hold that the prophecy embraces the whole history of the church and its foes from the time of its writing to the end of the world; the *Præterists*, who hold that the whole or nearly the whole of the prophecy has been already fulfilled, and that it refers chiefly to the triumph of Christianity over Paganism and Judaism; and the *Futurists*, who throw the whole prophecy, except the first three chapters, forward upon a time not yet reached by the church—a period of no very long duration, which is immediately to precede Christ's second coming.

Apocalyptic Number, the mystic number 666 found in Rev. xiii. 18. As early as the second century ecclesiastical writers found that the name Antichrist was indicated by the Greek characters expressive of this number. By Irenæus the word *Lateinos* was found in the letters of the number, and the Roman empire was therefore considered to be Antichrist. Protestants generally believe it has reference to the Papacy, and, on the other hand, Catholics connect it with Protestantism.

Apocar'pous, in botany, a term applied to such fruits as are the produce of a single flower, and are formed of one carpel, or a number of carpels free and separate from each other.

Apoc'rypha (Greek, 'things concealed or spurious'), a term applied in the earliest

churches to various sacred or professedly inspired writings, sometimes given to those whose authors were unknown, sometimes to those with a hidden meaning, and sometimes to those considered objectionable. The term is specially applied to the fourteen undermentioned books which were written during the two centuries preceding the birth of Christ. They were written, not in Hebrew, but in Greek, and the Jews never allowed them a place in their sacred canon. They were incorporated into the Septuagint, and thence passed to the Vulgate. The Greek Church excluded them from the canon in 360 at the Council of Laodicea. The Latin Church treated them with more favour, but it was not until 1546 that they were formally admitted into the canon of the Church of Rome by a decree of the Council of Trent. The Anglican Church says they may be read for example of life and instruction of manners, but that the church does not apply them to establish any doctrine. fourteen books form the Apocrypha of the English Bible:—The first and second Books of Esdras, Tobit, Judith, the rest of the Book of Esther, the Wisdom of Solomon, the Wisdom of Jesus the son of Sirach, or Ecclesiasticus, Baruch the Prophet, the Song of the Three Children, Susanna and the Elders, Bel and the Dragon, the Prayer of Manasses, and the first and second Books of Maccabees. Besides the Apocryphal books of the Old Testament there are many spurious books composed in the earlier ages of Christianity, and published under the names of Christ and his apostles, or of such immediate followers as from their character or means of intimate knowledge might give an apparent plausibility for such forgeries. These writings comprise: 1st, the Apocryphal Gospels, which treat of the history of Joseph and the Virgin before the birth of Christ, of the infancy of Jesus, and of the acts of Pilate; 2d, the Apocryphal Acts of the Apostles; and 3d, the Apocryphal Apocalypses, none of which have obtained canonical recognition by any of the churches. See Apocryphal Books of the New Testament; The Gebbie Pub. Co., Phila., Pa.

Apocyna'ceæ, a nat. order of dicotyledonous plants, having for its type the genus *Apocynum* or dog-bane. The species have opposite or sometimes whorled leaves without stipules; the corolla monopetalous, hypogynous, and with the stamens inserted upon it; fruit two-celled. The plants yield a milky juice, which is generally poisonous

several yield caoutchouc, and a few edible fruits. The bark of several species is a powerful febrifuge. To the order belongs the periwinkle (*Vinca*). See *Dog-bane*, *Cow-tree*, *Periwinkle*, *Oleander*, *Tanghin*.

Ap'oda (lit. footless animals), a name sometimes given to the snake-like or worm-like amphibians, as also to the apodal fishes (which see).

Ap'odal Fishes, the name applied to such malacopterous fishes as want ventral fins. They constitute a small natural family, of which the common eel is an example.

Apo'dōsis, in gram., the latter member of a conditional sentence (or one beginning with *if*, *though*, &c.) dependent on the condition or *protasis*; as, if it rain (*protasis*) I shall not go (*apodosis*).

Ap'ogee (-jē; Greek, *apo*, from, and *gē*, the earth), that point in the orbit of the moon or a planet where it is at its greatest distance from the earth; properly this particular part of the moon's orbit.

Apol'da, a town of Germany, in the Grand-duchy of Saxe-Weimar, at which woollen goods are extensively manufactured, employing 7000 hands. Pop. 18,061.

Apollina'rians, a sect of Christians who maintained the doctrine that the Logos (the Word) holds in Christ the place of the rational soul, and consequently that God was united in him with the human body and the sensitive soul. Apollinaris, the author of this opinion, was, from A.D. 362 till at least A.D. 382, Bishop of Laodicea, in Syria, and a zealous opposer of the Arians. As a man and a scholar he was highly esteemed, and was among the most popular authors of his time. He formed a congregation of his adherents at Antioch, and made Vitalis their bishop. The *Apollinarians*, or *Vitalians*, as their followers were called, soon spread their sentiments in Syria and the neighbouring countries, established several societies, with their own bishops, and one even in Constantinople; but the sect was suppressed in 428 by imperial edict.

Apollina'ris Water, a natural aerated water, belonging to the class of acidulated soda waters, and derived from the Apollinarisbrunnen, a spring in the valley of the Ahr, near the Rhine, in Rhenish Prussia, forming a highly esteemed beverage.

Apoll'o, son of Zeus (Jupiter) and Leto (Latona), who being persecuted by the jealousy of Hera (Juno), after tedious wanderings and nine days' labour, was delivered

of him and his twin sister, Artēmis (Diana), on the island of Delos. Skilled in the use of the bow, he slew the serpent Python on the fifth day after his birth; afterwards, with his sister Artemis, he killed the children of Niobē. He aided Zeus in the war with the Titans and the giants. He destroyed the Cyclopes, because they forged the thunderbolts with which Zeus killed his son and favourite Asklepios (Æsculapius). According to some traditions he invented the lyre, though this is generally ascribed



Apollo, from a bas-relief at Rome.

to Hermes (Mercury). Apollo was originally the sun-god; and though in Homer he appears distinct from Helios (the sun), yet his real nature is hinted at even here by the epithet Phœbus, that is, the radiant or beaming. In later times the view was almost universal that Apollo and Helios were identical. From being the god of light and purity in a physical sense he gradually became the god of moral and spiritual light and purity, the source of all intellectual, social, and political progress. He thus came to be regarded as the god of song and prophecy, the god that wards off and heals bodily suffering and disease, the institutor and guardian of civil and political order, and the founder of cities. His worship was introduced at Rome at an early period, probably in the time of the Tarquins. Among the ancient statues of Apollo that have come down to us, the most remarkable is the one called the *Apollo Belvidere*, from the Belvidere Gallery in the Vatican at Rome.

This statue was found in the ruins of Antium in 1503, and was purchased by Pope Julian II. It is now supposed to be a copy of a Greek statue of the third century B.C., and dates probably from the reign of Nero.

Apollodo'rus, a Greek writer who flourished 140 B.C. Among the numerous works he wrote on various subjects, the only one extant is his *Bibliotheca*, which contains a concise account of the mythology of Greece down to the heroic age.

Apollo'nus of Perga, Greek mathematician, called the 'great geometer,' flourished about 240 B.C., and was the author of many works, only one of which, a treatise on Conic Sections, partly in Greek and partly in an Arabic translation, is now extant.

Apollo'nus of Rhodes, a Greek rhetorician and poet, flourished about 230 B.C. Of his various works we have only the *Argonautica*, an epic poem of moderate merit, though written with much care and labour, dealing with the story of the Argonautic expedition.

Apollo'nus of Ty'ana, in Cappadocia, a Pythagorean philosopher who was born in the beginning of the Christian era, early adopted the Pythagorean doctrines, abstaining from animal food and maintaining a rigid silence for five years. He travelled extensively in Asia, professed to be endowed with miraculous powers, such as prophecy and the raising of the dead, and was on this account set up by some as a rival to Christ. His ascetic life, wise discourses, and wonderful deeds obtained for him almost universal reverence, and temples, altars, and statues were erected to him. He died at Ephesus about the end of the first century. A narrative of his strange career, containing many fables, with, perhaps, a kernel of truth, was written by Philostratus about a century later.

Apollo'nus of Tyre, the hero of a tale which had an immense popularity in the middle ages and which furnished the plot of Shakspeare's *Pericles, Prince of Tyre*. The story, originally in Greek, first appeared in the third century after Christ.

Apoll'os, a Jew of Alexandria, who learned the doctrines of Christianity at Ephesus from Aquila and Priscilla, became a preacher of the gospel in Achaia and Corinth, and an assistant of Paul in his missionary work. Some have regarded him as the author of the *Epistle to the Hebrews*.

Apoll'yon ('the Destroyer'), a name used

in Rev. ix. 11 for the angel of the bottomless pit.

Apologetics (-jet'iks), a term applied to that branch of theological learning which consists in the systematic exhibition of the arguments for the divine origin of Christianity. See *Evidences of Christianity*.

Apologue (ap'o-log), a story or relation of fictitious events intended to convey some useful truths. It differs from a parable in that the latter is drawn from events that pass among mankind, whereas the apologue may be founded on supposed actions of brutes or inanimate things. Æsop's fables are good examples of apologues.

Apol'ogy, a term at one time applied to a defence of one who is accused, or of certain doctrines called in question. Of this nature are the Apologies of Socrates, attributed respectively to Plato and Xenophon. The name passed over to Christian authors, who gave the name of apologies to the writings which were designed to defend Christianity against the attacks and accusations of its enemies, particularly the pagan philosophers, and to justify its professors before the emperors. Of this sort were those by Justin Martyr, Athenagoras, Tertullian, Tatian, and others.

Aponeuro'sis, in anatomy, a name of certain grayish-white shining membranes, composed of interlacing fibres, sometimes continuous with the muscular fibre, and differing from tendons merely in having a flat form. They serve several purposes, sometimes attaching the muscles to the bones, sometimes surrounding the muscle and preventing its displacement, &c.

Apophthegm (ap'o-them), a short pithy sentence or maxim. Julius Cæsar wrote a collection of them, and we have a collection by Lord Bacon.

Apoph'yllite, a species of mineral of a foliated structure and pearly lustre, called also fish-eye stone. It belongs to the Zeolite family, and is a hydrated silicate of lime and potash, containing also fluorine.

Ap'oplexy, abolition or sudden diminution of sensation and voluntary motion, from suspension of the functions of the cerebrum, resulting from congestion or rupture of the blood-vessels of the brain and resulting pressure on this organ. In a complete apoplexy the person falls suddenly, is unable to move his limbs or to speak, gives no proof of seeing, hearing, or feeling, and the breathing is stertorous or snoring, like that of a person in deep sleep. The premonitory

symptoms of this dangerous disease are drowsiness, giddiness, dulness of hearing, frequent yawning, disordered vision, noise in the ears, vertigo, &c. It is most frequent between the ages of fifty and seventy. A large head, short neck, full chest, sanguine and plethoric constitution, and corpulency are generally considered signs of predisposition to it; but the state of the heart's action, with a plethoric condition of the vascular system, has a more marked influence. Out of 63 cases carefully investigated only 10 were fat and plethoric, 23 being thin, and the rest of ordinary habit. Among the common predisposing causes are long and intense thought, continued anxiety, habitual indulgence of the temper and passions, sedentary and luxurious living, sexual indulgence, intoxication, &c. More or less complete recovery from a first and second attack is common, but a third is almost invariably fatal.

Aposiope'sis, in rhetoric, a sudden break or stop in speaking or writing, usually for mere effect or a pretence of unwillingness to say anything on a subject; as, 'his character is such—but it is better I should not speak of that.'

Apos'tasy (Gr. *apostasis*, a standing away from), a renunciation of opinions or practices and the adoption of contrary ones, usually applied to renunciation of religious opinions. It is always an expression of reproach. What one party calls *apostasy* is termed by the other *conversion*. Catholics, also, call those persons *apostates* who forsake a religious order or renounce their religious vows without a lawful dispensation.

A postero'ri. See *A priori*.

Apos'tles (literally persons sent out, from the Greek *apostellein*, to send out), the twelve men whom Jesus selected to attend him during his ministry, and to promulgate his religion. Their names were as follows:—Simon Peter, and Andrew his brother; James, and John his brother, sons of Zebedee; Philip; Bartholomew; Thomas; Matthew; James, the son of Alphaeus; Lebbeus his brother, called *Judas* or *Jude*; Simon, the Canaanite; and Judas Iscariot. To these were subsequently added Matthias (chosen by lot in place of Judas Iscariot) and Paul. The Bible gives the name of apostle to Barnabas also, who accompanied Paul on his missions (Acts xiv. 14). In a wider sense those preachers who first taught Christianity in heathen countries are sometimes termed apostles; for example, St.

Denis, the apostle of the Gauls; St. Boniface, the apostle of Germany; St. Augustin, the apostle of England; Francis Xavier, the apostle of the Indies; Adalbert of Prague, apostle of Prussia Proper. During the life of the Saviour the apostles more than once showed a misunderstanding of the object of his mission, and during his sufferings evinced little courage and firmness of friendship for their great and benevolent Teacher. After his death they received the Holy Ghost on the day of Pentecost, that they might be enabled to fulfil the important duties for which they had been chosen. Their subsequent history is only imperfectly known. According to one interpretation of Matthew xvi. 18 Christ seems to appoint St. Peter the first of the apostles; and the pope claims supreme authority from the power which Christ thus gave to St. Peter, of whom all the popes, according to the Catholic dogma, are successors in an uninterrupted line.

Apostles' Creed, a well-known formula or declaration of Christian belief, formerly believed to be the work of the apostles themselves, but it can only be traced to the fourth century. See *Creed*.

Apostol'ic, APOSTOL'ICAL, pertaining or relating to the apostles.—*Apostolic Church*, the church in the time of the apostles, constituted according to their design. The name is also given to the four churches of Rome, Alexandria, Antioch, and Jerusalem, and is claimed by the Roman Catholic Church, and occasionally by the Episcopalians.—*Apostolic Constitutions* and *Canons*, a collection of regulations attributed to the apostles, but generally supposed to be spurious. They appeared in the fourth century; are divided into eight books, and consist of rules and precepts relating to the duty of Christians, and particularly to the ceremonies and discipline of the church.—*Apostolic fathers*, the Christian writers who during any part of their lives were contemporary with the apostles. There are five—Clement, Barnabas, Hermas, Ignatius, Polycarp.—*Apostolic king*, a title granted by the pope to the kings of Hungary, first conferred on St. Stephen, the founder of the royal line of Hungary, on account of what he accomplished in the spread of Christianity.—*Apostolic see*, the see of the popes or bishops of Rome: so called because the popes profess themselves the successors of St. Peter, its founder.—*Apostolic succession*, the uninterrupted succession of bishops, and, through

them, of priests and deacons (these three orders of ministers being called the *apostolical orders*), in the church by regular ordination from the first apostles down to the present day. All Episcopal churches hold theoretically, and the Roman Catholic Church and many members of the English Church strictly, that such succession is essential to the officiating priest, in order that grace may be communicated through his administrations.

Apostol'ics, **APOSTOLICI**, or **APOSTOLIC BRETHREN**, the name given to certain sects who professed to imitate the manners and practice of the apostles. The last and most important of these sects was founded about 1260 by Gerhard Segarelli of Parma. They went barefooted, begging, preaching, and singing throughout Italy, Switzerland, and France; announced the coming of the kingdom of heaven and of purer times; denounced the papacy, and its corrupt and worldly church; and inculcated the complete renunciation of all worldly ties, of property, settled abode, marriage, &c. This society was formally abolished, 1286, by Honorius IV. In 1300 Segarelli was burned as a heretic, but another chief apostle appeared—Dolcino, a learned man of Milan. In self-defence they stationed themselves in fortified places whence they might resist attacks. After having devastated a large tract of country belonging to Milan they were subdued, A.D. 1307, by the troops of Bishop Raynerius, in their fortress Zebello, in Vercelli, and almost all destroyed. Dolcino was burned. The survivors afterwards appeared in Lombardy and in the south of France as late as 1368.

Apo'strōphē (Greek, 'a turning away from'), a rhetorical figure by which the orator changes the course of his speech, and makes a short impassioned address to one absent as if he were present, or to things without life and sense as if they had life and sense. The same term is also applied to a comma when used to contract a word, or to mark the possessive case, as in 'John's book.'

Apothecaries' weight, the weight used in dispensing drugs, in which the pound (lb.) is divided into 12 ounces (℥), the ounce into 8 drachms (℥), the drachm into 3 scruples (℥), and the scruple into 20 grains (grs.), the grain being equivalent to that in avoirdupois weight.

Apoth'ecary, in a general sense, one who keeps a shop or laboratory for preparing,

compounding, and vending medicines, and for the making up of medical prescriptions. In England the term was long applied (as to some little extent still) to a regularly licensed class of medical practitioners, being such persons as were members of, or licensed by, the *Apothecaries' Company* in London. The apothecaries of London were at one time ranked with the grocers, with whom they were incorporated by James I. in 1606. In 1617, however, the apothecaries received a new charter as a distinct company. They were not yet regarded as having the right to prescribe, but only to dispense, medicines; but in 1703 the House of Lords conferred that right on them, and they latterly became a well-established branch of the medical profession. In 1815 an act was passed providing that no person should practise as an apothecary in any part of England or Wales unless after serving an apprenticeship of five years with a member of the society, and receiving a certificate from the society's examiners. As in country places every practitioner must be to some extent an apothecary, this act gave the society an undue influence over the medical profession. Dissatisfaction therefore long prevailed, but nothing of importance was done till the Medical Act of 1858, which brought the desired reform. The Apothecaries' Company have prescribed a course of medical instruction and practice for candidates for the license of the society. In the United States the several States have laws controlling apothecaries.

Apothe'cium, in botany, the receptacle of lichens, consisting of the spore-cases or asci, and of the paraphyses or barren threads.

Apotheo'sis (deification), a solemnity among the ancients by which a mortal was raised to the rank of the gods. The custom of placing mortals, who had rendered their countrymen important services, among the gods was very ancient among the Greeks. The Romans, for several centuries, deified none but Romulus, and first imitated the Greeks in the fashion of frequent apotheosis after the time of Cæsar. From this period apotheosis was regulated by the decrees of the senate, and accompanied with great solemnities. The greater part of the Roman emperors were deified.

Appalachian Mountains (ap-pa-lā'-chi-an), also called **ALLEGHANIES**, a vast mountain range in N. America extending for 1300 miles from Cape Gaspé, on the Gulf of St. Lawrence, s.w. to Alabama.

The system has been divided into three great sections: the *northern* (including the Adirondacks, the Green Mountains, the White Mountains, &c.), from Cape Gaspé to New York; the *central* (including a large portion of the Blue Ridge, the Alleghanies proper, and numerous lesser ranges), from New York to the valley of the New River; and the *southern* (including the continuation of the Blue Ridge, the Black Mountains, the Smoky Mountains, &c., from the New River southwards. The chain consists of several ranges generally parallel to each other, the altitude of the individual mountains increasing on approaching the south. The highest peaks rise over 6600 feet (not one at all approaching the snow-level), but the mean height is about 2500 feet. Lake Champlain is the only lake of great importance in the system, but numerous rivers of considerable size take their rise here. Magnetite, hematite, and other iron ores occur in great abundance, and the coal-measures are among the most extensive in the world. Gold, silver, lead, and copper are also found, but not in paying quantities, while marble, limestone, fire-clay, gypsum, and salt abound. The forests covering many of the ranges yield large quantities of valuable timber, such as sugar-maple, white birch, beech, ash, oak, cherry-tree, white poplar, white and yellow pine, &c., while they form the haunts of large numbers of bears, panthers, wild cats, and wolves.

Appalachicola (-chi-cō'la), a river of the United States, formed by the Chattahoochee and Flint Rivers, which unite near the northern border of Florida; length, about 100 miles; flows into the Gulf of Mexico, and is navigable.

Appanage. See *Apanage*.

Appa'rent, among mathematicians and astronomers, applied to things as they appear to the eye, in distinction from what they really are. Thus they speak of apparent motion, magnitude, distance, height, &c. The *apparent magnitude* of a heavenly body is the angle subtended at the spectator's eye by the diameter of that body, and this, of course, depends on the distance as well as the real magnitude of the body; *apparent motion* is the motion a body seems to have in consequence of our own motion, as the motion of the sun from east to west, &c.

Appari'tion, according to a belief held by some, a disembodied spirit manifesting itself to mortal sight; according to the common

theory an illusion involuntarily generated, by means of which figures or forms, not present to the actual sense, are nevertheless depicted with a vividness and intensity sufficient to create a temporary belief of their reality. Such illusions are now generally held to result from an overexcited brain, a strong imagination, or some bodily malady. In perfect health the mind not only possesses a control over its powers, but the impressions of the external objects alone occupy its attention, and the play of imagination is consequently checked, except in sleep, when its operations are relatively more feeble and faint. But in the unhealthy state of the mind, when its attention is partly withdrawn from the contemplation of external objects, the impressions of its own creation, or rather reproduction, will either overpower or combine themselves with the impressions of external objects, and thus generate illusions which in the one case appear alone, while in the other they are seen projected among those external objects to which the eyeball is directed. This theory explains satisfactorily a large majority of the stories of apparitions; still there are some which it seems insufficient to account for. In recent times, though the belief in ghosts of the old and orthodox class may be said to have almost died out, a new and kindred faith has arisen, that of Spiritualism.

Appeal', in legal phraseology, the removal of a cause from an inferior tribunal to a superior, in order that the latter may revise, and if it seem needful reverse or amend, the decision of the former. The supreme court of appeal for Great Britain is the House of Lords. Till recently there were certain defects in connection with the settlement of appeals by this body, but these have been remedied by the Appellate Jurisdiction Act, 1876, while a new court of appeal has also been established as a division of the Supreme Court of Judicature. In Ireland there is also a Court of Appeal similar to that in England; while in Scotland the highest court is the Court of Session. In the United States the system of appeals differs in different States. In legislative bodies, the act by which a member, who questions the correctness of a decision of the presiding officer, or chairman, procures a vote of the body upon the decision. In the House of Representatives of the United States the question of an appeal is put to the House in this form: "Shall the

decision of the chair stand as the judgment of the House?" If the appeal relates to an alleged breach of decorum, or transgression of the rules of order, the question is taken without debate. If it relates to the admissibility or relevancy of a proposition, debate is permitted, except when a motion for the previous question is pending.

Appenzell (ap'pen-tsel), a Swiss canton, wholly inclosed by the canton of St. Gall; area, 162 square miles. It is divided into two independent portions or half-cantons, Ausser-Rhoden, which is Protestant, and Inner - Rhoden, which is Catholic. It is an elevated district, traversed by branches of the Alps; Mount Sentis in the centre being 8250 feet high. It is watered by the Sitter and by several smaller affluents of the Rhine. Glaciers occupy

the higher valleys. Flax, hemp, grain, fruit, &c., are produced, but the wealth of Inner-Rhoden lies in its herds and flocks — that of Outer-Rhoden in its manufactures of embroidered muslins, gauzes, cambrics, and other cotton stuffs; also of silk goods and paper. The town of Appenzell (German, *Abtenzelle*, abbot's cell) is the capital of Inner-Rhoden, on the Sitter, with about 4300 inhabitants. Trogen is the capital of Outer-Rhoden, Herisau the largest town (pop. 11,000). Pop. Outer-Rhoden, 51,960; Inner-Rhoden, 12,882.

Ap'petite, in its widest sense, means the natural desire for gratification, either of the body or the mind; but is generally applied to the recurrent and intermittent desire for food. A healthy appetite is favoured by work, exercise, plain living, and cheerfulness; absence of this feeling, or defective appetite (*anorexia*), indicates diseased action of the stomach, or of the nervous system or circulation, or it may result from vicious habits. Depraved appetite (*pica*), or a desire for unnatural food, as chalk, ashes, dirt, soap, &c., depends often in the case of children on vicious tastes or habits; in grown-up persons it may be symptomatic of dyspepsia, pregnancy, or chlorosis. Insatiable or canine appetite or voracity (*bulimia*) when

it occurs in childhood is generally symptomatic of worms; in adults common causes are pregnancy, vicious habits, and indigestion caused by stomach complaints or gluttony, when the gnawing pains of disease are mistaken for hunger.

Ap'pian, a Roman historian of the second century after Christ, a native of Alexandria, was governor and manager of the imperial revenues under Hadrian, Trajan, and Antoninus Pius, in Rome. He compiled in Greek a Roman history, from the earliest times to those of Augustus, in twenty-four books, of which only eleven have come down to us — of little value.

Appia'ni, **ANDREA**, a painter, born at Milan in 1754, died in 1817. As a fresco-painter he excelled every contemporary painter in Italy. He displayed his skill particularly in the

cupola of Santa Maria di S. Celso at Milan, and in the paintings representing the legend of Cupid and Psyche, prepared for the walls and ceiling of the villa of the Archduke Ferdinand at Monza (1795). Napoleon appointed him royal court painter, and portraits of almost the whole of the imperial family were painted by him.

Appian Way, called *Regina Viarum*, the Queen of Roads: the oldest and most renowned Roman road, was constructed during the censorship of Appius Claudius Cæcus (B.C. 313–310). It was built with large square stones on a raised platform, and was made direct from the gates of Rome to Capua, in Campania. It was afterwards extended through Samnium and Apulia to Brundisium, the modern Brindisi. It was partially restored by Pius VI., and in 1850–53 it was excavated by order of Pius IX. as far as the eleventh milestone from Rome.

Appius Claudius, surnamed *Cæcus*, or the blind, an ancient Roman, elected censor B.C. 312, which office he held four years. While in this position he made every effort to weaken the power of the plebs, and constructed the road and aqueduct named after him. He was subsequently twice consul, and once dictator. In his old age he became blind, but in B.C. 280 he made a



Construction of a Portion of the Appian Way.

famous speech in which he induced the senate to reject the terms of peace fixed by Pyrrhus. He is the earliest Roman writer of prose and verse whose name we know.

Appius Claudius Crassus, one of the Roman *decemvirs*, appointed B.C. 451 to draw up a new code of laws. He and his colleagues plotted to retain their power permanently, and at the expiry of their year of office refused to give up their authority. The people were incensed against them, and the following circumstances led to their overthrow. Appius Claudius had conceived an evil passion for Virginia, the daughter of Lucius Virginius, then absent with the army in the war with the Æqui and Sabines. At the instigation of Appius, Marcus Claudius, one of his clients, claimed Virginia as the daughter of one of his own female slaves, and the decemvir, acting as judge, decided that in the meantime she should remain in the custody of the claimant. Virginius, hastily summoned from the army, appeared with his daughter next day in the forum, and appealed to the people; but Appius Claudius again adjudged her to M. Claudius. Unable to rescue his daughter, the unhappy father stabbed her to the heart. The decemvirs were deposed by the indignant people B.C. 449, and Appius Claudius died in prison or was strangled.

Apple (*Pyrus Malus*), the fruit of a well-known tree of the nat. order Rosaceæ, or the tree itself. The apple belongs to the temperate regions of the globe, over which it is almost universally spread and cultivated. The tree attains a moderate height, with spreading branches; the leaf is ovate; and the flowers are produced from the wood of the former year, but more generally from very short shoots or spurs from wood of two years' growth. The original of all the varieties of the cultivated apple is the wild crab, which has a small and extremely sour fruit, and is a native of most of the countries of Europe. The apple was probably introduced into Britain by the Romans. To the facility of multiplying varieties by grafting is to be ascribed the amazing extension of the sorts of apples. Many of the more marked varieties are known by general names, as pippins, codlins, renetts, &c. Apples for the table are characterized by a firm juicy pulp, a sweetish acid flavour, regular form, and beautiful colouring; those for cooking by the property of forming by the aid of heat into a pulpy mass of equal consistency, as also by their large size and keeping proper-

ties; apples for cider must have a considerable degree of astringency, with richness of juice. The propagation of apple-trees is accomplished by seeds, cuttings, suckers, layers, budding, or grafting, the last being almost the universal practice. The tree thrives best in a rich deep loam or marshy clay, but will thrive in any soil provided it is not too wet or too dry. The wood of the apple-tree or the common crab is hard, close-grained, and often richly coloured, and is suitable for turning and cabinet work. The fermented juice (*verjuice*) of the crab is employed in cookery and medicine. Cider, the fermented juice of the apple, is a favourite drink in many parts of the United States. The designation apple, with various modifying words, is applied to a number of fruits having nothing in common with the apple proper, as alligator-apple, love-apple, &c.

Ap'pleby, county town of Westmoreland, England, on the Eden, 28 miles S.S.E. Carlisle, giving its name to a parl. div. of the county. It has an old castle, the keep of which, called Cæsar's Tower, is still fairly preserved. Pop. 1989.

Apple of discord, according to the story in the Greek mythology, the golden apple thrown into an assembly of the gods by the goddess of discord (Eris) bearing the inscription 'for the fairest.' Aphrodītē (Venus), Hera (Juno), and Pallas (Minerva) became competitors for it, and its adjudication to the first by Paris so inflamed the jealousy and hatred of Hera to all of the Trojan race (to which Paris belonged) that she did not cease her machinations till Troy was destroyed.

Apple of Sodom, a fruit described by old writers as externally of fair appearance, but turning to ashes when plucked; probably the fruit of *Solanum sodomæum*.

Ap'pleton, a city of Wisconsin, U.S., 100 m. N.W. of Milwaukee by rail. It has many flour, paper, saw, and woollen mills, and other manufactories, and is the seat of a collegiate institute and of Lawrence University. Pop. 1890, 11,869.

Appoggiatura (ap-poj-à-tö'ra), in music, a small additional note of embellishment preceding the note to which it is attached, and taking away from the principal note a portion of its time.

Appoint'ment, in chancery practice, signifying the exercise of some power, reserved in a conveyance or settlement, of burdening, selling, or otherwise disposing of

the lands or property conveyed. Such a reserved power is termed a *power of appointment*.

Appomatt'ox Court-house, a village in Virginia, U.S., 20 m. E. of Lynchburg. Here on 9th April, 1865, Gen. Lee surrendered to Gen. Grant, and thus virtually concluded the American civil war.

Apposi'tion, in grammar, the relation in which one or more nouns or substantive phrases or clauses stand to a noun or pronoun, which they explain or characterize without being predicated of it, and with which they agree in case; as Cicero, the *orator*, lived in the first century before Christ; the opinion, *that a severe winter is generally followed by a good summer*, is a vulgar error.

Appraiser, one who appraises; a person appointed and sworn to set a value upon things to be sold.

Apprehend, to grasp in the hands; in this sense it is now confined to the legal arrest of persons.

Apprehension, the capture of a person upon a criminal charge. The term *arrest* is applied to civil cases; as, a person having authority may *arrest* on *civil* process, and *apprehend* on a *criminal* warrant. See *Arrest*.

Apprentice, one bound by indenture to serve some particular individual for a specified time, in order to be instructed in some art, science, or trade. At common law an infant may bind himself apprentice by indenture, because it is for his benefit. But this contract, on account of its liability to abuse, has been regulated by statute in the United States, and is not binding upon the infant unless entered into by him with the consent of the parent or guardian, or by the parent or guardian for him, with his consent. The duties of the master are, to instruct the apprentice by teaching him the knowledge of the art which he had undertaken to teach him, though he will be excused for not making a good workman, if the apprentice is incapable of learning the trade. He cannot dismiss his apprentice except by consent of all the parties to the indenture. An apprentice is bound to obey his master in all his lawful commands, take care of his property, and promote his interests, and endeavour to learn his trade or business, and perform all the covenants in his indenture not contrary to law. He must not leave his master's service during the term of his apprenticeship.

Approach'es, zigzag trenches made to connect the parallels in besieging a fortress.

Appropriation. In the United States no money can be drawn from the Treasury, but in consequence of appropriations made by law (Constitution, Art. I.). Under this clause it is necessary for Congress to appropriate money for the support of the Federal government, and in payment of claims against it. In House of Representatives appropriation bills have precedence.

Approxima'tion, a term used in mathematics to signify a continual approach to a quantity required, when no process is known for arriving at it exactly. Although, by such an approximation, the exact value of a quantity cannot be discovered, yet, in practice, it may be found sufficiently correct; thus the diagonal of a square, whose sides are represented by unity, is $\sqrt{2}$, the exact value of which quantity cannot be obtained; but its approximate value may be substituted in the nicest calculations.

Appuleius. See *Apuleius*.

Ap'ricot (*Prunus Armeniāca*), a fruit of the plum genus which was introduced into Europe from Asia more than three centuries before Christ, and into England in the first half of the sixteenth century. It is a native of Armenia and other parts of Asia and also of Africa. The apricot is a low tree, of rather crooked growth, with somewhat heart-shaped leaves and sessile flowers. The fruit is sweet, more or less juicy, of a yellowish colour, about the size of the peach, and resembling it in delicacy of flavour. The wood is coarsely grained and soft. Apricot-trees are chiefly raised against walls, and are propagated by budding and grafting.

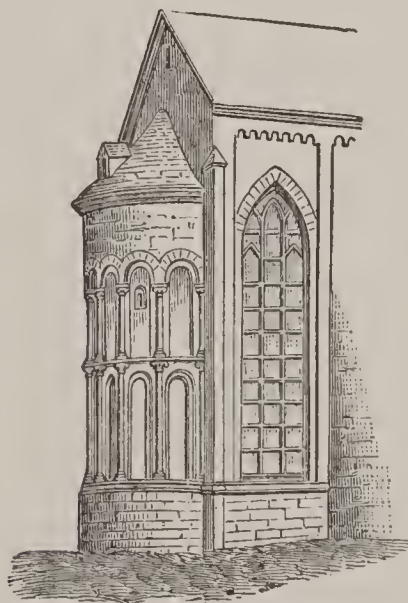
Apries (ā'pri-ēz), Pharaoh-Hophra of Scripture, the eighth king of the twenty-sixth Egyptian dynasty. He succeeded his father Psamuthius in 590 or 588 B.C. The Jews under Zedekiah revolted against their Babylonian oppressors and allied themselves with Apries, who was, however, unable to raise the siege of Jerusalem, which was taken by Nebuchadnezzar. A still more unfortunate expedition against Cyrene brought about revolt in his army, in endeavouring to suppress which Apries was defeated and slain about B.C. 569.

A'pril (Lat. *Aprīlis*, from *aperire*, to open, because the buds open at this time), the fourth month of the year. The strange custom of making fools on the 1st April by

sending people upon errands and expeditions which end in disappointment, and raise a laugh at the expense of the person sent, prevails throughout Europe. It has been connected with the miracle plays of the middle ages, in which the Saviour was represented as having been sent, at this period of the year, from Annas to Caiaphas and from Pilate to Herod. In France the party fooled is called *un poisson d'avril*, 'an April fish.'

A prio'ri ('from what goes before'), a phrase applied to a mode of reasoning by which we proceed from general principles or notions to particular cases, as opposed to *a posteriori* ('from what comes after') reasoning, by which we proceed from knowledge previously acquired. Mathematical proofs are of the *a priori* kind; the conclusions of experimental science are *a posteriori*. It is also a term applied to knowledge independent of all experience.

Apse, a portion of any building forming a termination or projection semicircular or



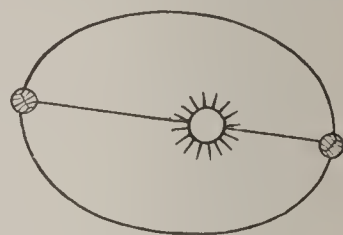
Apse—Laach, Germany.

polygonal in plan, and having a roof forming externally a semi-dome or semi-cone, or having ridges corresponding to the angles of the polygon; especially such a semicircular or polygonal recess projecting from the east end of the choir or chancel of a church, in which the altar is placed. The apse was developed from the somewhat similar part of the Roman basilicæ, in which the magistrate (*prætor*) sat.

Ap'sheron, a peninsula on the western shore of the Caspian Sea formed by the eastern extremity of the Caucasus Mountains. It extends for about 40 m., and

terminates in Cape Apsheron. It yields immense quantities of petroleum. See *Baku*.

Apsis, pl. **Ap'sides** or **Apsi'des**, in astron. one of the two points of the orbit of a heavenly body situated at the extremities of the major axis of the ellipse formed by the orbit, one of the points being that at which the body is at its greatest and the other that at which it is at its least distance from its primary.



a a, Apsides.

In regard to the earth and the other planets, these two points correspond to the aphelion and perihelion; and in regard to the moon they correspond to the apogee and perigee. The line of the apsides has a slow forward angular motion in the plane of the planet's orbit, being retrograde only in Venus. This in the earth's orbit produces the anomalistic year. See *Anomaly*.

Apt (ät; anc. *Apta Julia*), a town of southern France, department Vaucluse, 32 miles east by south of Avignon, with an ancient Gothic cathedral. Pop. 4362.

Ap'tera, wingless insects, such as lice and certain others.

Ap'teryx, a nearly extinct genus of cursorial birds, distinguished from the ostriches by having three toes with a rudimentary hallux, which forms a spur. They are natives of the South Island of New Zealand; are totally wingless and tailless, with fea-



Apteryx (*Apteryx* Mantelli).

thers resembling hairs; about the size of a small goose; with long curved beak something like that of a curlew. They are entirely nocturnal, feeding on insects, worms, and seeds.—*A. australis*, called *Kiwi-kiwi* from its cry, is the best-known species.

Apuleius, or **APPULEIUS** (ap-ū-lē'us), author of the celebrated satirical romance in Latin called the Golden Ass, born at Madaura, in Numidia, in the early part of the second century A.D.; the time of his death unknown. He studied at Carthage, then at Athens, where he became warmly attached, in particular, to the Platonic philosophy, and finally at Rome. Returning to Carthage he married a rich widow, whose relatives accused him of gaining her consent by magic, and the speech by which he successfully defended himself is still extant. Besides his Golden Ass, with its fine episode of Cupid and Psyche, he was also the author of many works on philosophy and rhetoric, some of which are still extant.

Apu'lia, a department or division in the south-east of Italy, on the Adriatic, composed of the provinces of Foggia, Bari, and Lecce; area, 8539 sq. miles; pop. 1,587,713.

Apure (ā-pō'rā), a navigable river of Venezuela, formed by the junction of several streams which rise in the Andes of Colombia; it falls into the Orinoco.

Apurimac (ā-pō-rē-māk'), a river of South America, which rises in the Andes of Peru; and being augmented by the Vilcamayu and other streams forms the Ucayale, one of the principal head-waters of the Amazon.

Aq'ua (Latin for water), a word much used in pharmacy and old chemistry.—*Aqua fortis* (= strong water), a weak and impure nitric acid. It has the power of eating into steel and copper, and hence is used by engravers, etchers, &c.—*Aqua marina*, a fine variety of beryl. See *Aquamarine*.—*Aqua regia*, or *aqua regalis* (= royal water), a mixture of nitric and hydrochloric acids, with the power of dissolving gold and other noble metals.—*Aqua Tofana*, a poisonous fluid made about the middle of the seventeenth century by an Italian woman Tofana or Toffania, who is said to have procured the death of no fewer than 600 individuals by means of it. It consisted chiefly, it is supposed, of a solution of crystallized arsenic.—*Aqua vitæ* (= water of life), or simply *aqua*, a name familiarly applied to the whisky of Scotland, corresponding in meaning with the *usquebaugh* of Ireland, the *eau de vie* (brandy) of the French.

Aqua-fortis. See above art.

Aq'uamarine, a name given to some of the finest varieties of beryl of a sea-green or blue colour. Varieties of topaz are also so called.

Aqua'rium, a vessel or series of vessels

constructed wholly or partly of glass and containing salt or fresh water in which are kept living specimens of marine or freshwater animals along with aquatic plants. In principle the aquarium depends on the interdependence of animal and vegetable life; animals consuming oxygen and exhaling carbonic acid, plants reversing the process by absorbing carbonic acid and giving out oxygen. The aquarium must consequently be stocked both with plants and animals, and for the welfare of both something like a proper proportion should exist between them. The simplest form of aquarium is that of a glass vase; but aquariums on a larger scale consist of a tank or a number of tanks with plate-glass sides and stone floors, and contain sand and gravel, rocks, sea-weeds, &c. By improved arrangements light is admitted from above, passing through the water in the tanks and illuminating their contents, while the spectator is in comparative darkness. Aquariums on a large scale have been constructed in connection with public parks or gardens, and the name is also given to places of public entertainment in which large aquariums are exhibited.

Aquarius (L.), the Water-bearer; a sign in the zodiac which the sun enters about the 21st of January: so called from the rains which prevail at that season in Italy and the East.

Aquatint, a method of etching on copper by which a beautiful effect is produced, resembling a fine drawing in sepia or Indian ink. The special character of the effect is the result of sprinkling finely powdered resin or mastic over the plate, and causing this to adhere by heat, the design being previously etched, or being now traced out. The nitric acid (*aqua fortis*) acts only in the interstices between the particles of resin or mastic, thus giving a slightly granular appearance.

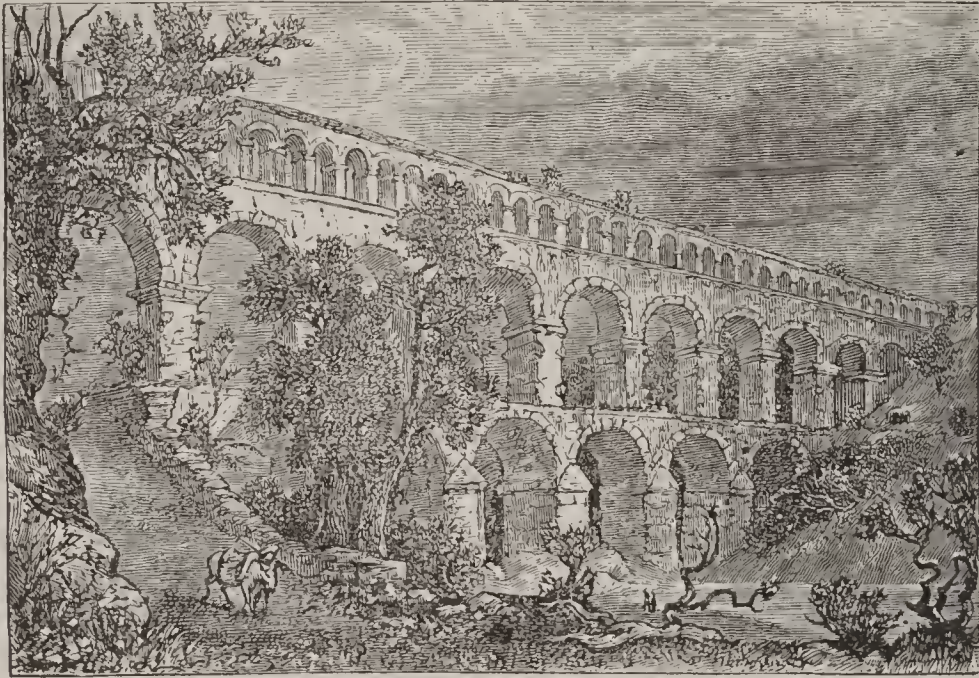
Aqua Tofa'na. See *Aqua*.

Aqua vitæ. See *Aqua*.

Aq'ueduct (Lat. *aqua*, water, *duco*, to lead), an artificial channel or conduit for the conveyance of water from one place to another: more particularly applied to structures for conveying water from distant sources for the supply of large cities. Aqueducts were extensively used by the Romans, and many of them still remain in different places on the Continent of Europe, some being still in use. The Pont du Gard in the south of France, 14 m. from Nîmes, is

still nearly perfect, and is a grand monument of the Roman occupation of this country. The ancient aqueducts were constructed of stone or brick, sometimes tunnelled through hills, and carried over valleys and rivers on arches. The Pont du Gard is built of great blocks of stone; its height is 160 feet; length of the highest arcade, 882 ft. The aqueduct at Segovia, originally built by the Romans, has in some parts two tiers of arcades 100 feet high, is 2921 feet in length, and is one of the most admired

works of antiquity. One of the most remarkable aqueducts of modern times is that constructed by Louis XIV. for conveying the waters of the Eure to Versailles. The extensive application of metal pipes has rendered the construction of aqueducts of the old type unnecessary; but what may be called aqueduct bridges are still frequently constructed in connection with water-works for the supply of towns, and where canals exist canal aqueducts are common, since the water in a canal must be kept on a



The Pont du Gard Aqueduct.

perfect level. In the United States there are some important aqueducts, as the Croton, about 40½ m. long, bringing water to New York.

Aqueous Humour, the limpid watery fluid which fills the space between the cornea and the crystalline lens in the eye.

Aqueous rocks, mechanically formed rocks, composed of matter deposited by water. Called also *sedimentary* or *stratified rocks*. See *Geology*.

Aquifolia'ceæ, a nat. order of plants; the holly tribe. The species consist of trees and shrubs, and the order includes the common holly (*Ilex Aquifolium*) and the *I. paraguayensis*, or Paraguayan tea tree.

Aquila (ak'wē-là), a town in Italy, capital of the province of Aquila, 55 miles north-east of Rome, the seat of a bishop, an attractive and interesting town with spacious streets and handsome palaces. In 1703 and 1706 it suffered severely from earthquakes.

Pop. 14,720. The province has an area of 2509 sq. miles, a population of 371,332.

Aq'uila, a native of Pontus, flourished about 130 A.D., celebrated for his exceedingly close and accurate translation of the Hebrew Scriptures into Greek.

Aq'uila. See *Eagle*.

Aquila'ria. See *Alocs-wood*.

Aquile'gia, a genus of plants. See *Columbine*.

Aquileia (ak-wi-lē'a), an ancient city near the head of the Adriatic Sea, in Upper Italy, built by the Romans in 182 or 181 B.C. Commanding the N.E. entrance into Italy it became important as a commercial centre and a military post, and was frequently the base of imperial campaigns. In 425 it was destroyed by Attila. The modern Aquileia or Aglar is a small place of some 1700 inhabitants, consisting chiefly of fishermen.

Aquinas (a-kwī'nas; i.e. of Aquino), St. THOMAS, a celebrated scholastic divine, born about 1227, died in 1274; descended from

the counts of Aquino, in the Kingdom of the Two Sicilies. He was educated at the Benedictine monastery of Monte Casino, and at the University of Naples, where he studied for six years. About the age of seventeen he entered a convent of Dominicans, much against the wishes of his family. He attended the lectures of Albertus Magnus at Cologne, in whose company he visited Paris in 1245 or 1246. Here he became involved in the dispute between the university and the Begging Friars as to the liberty of teaching, advocating the rights claimed by the latter with great energy. In 1257 he received the degree of doctor from the Sorbonne, and began to lecture on theology, rapidly acquiring

the highest reputation. In 1263 he is found at the Chapter of the Dominicans in London. In 1268 he was in Italy, lecturing in Rome, Bologna, and elsewhere. In 1271 he was again in Paris lecturing to the students; in 1272 professor at Naples. In 1263 he had been offered the archbishopric of Naples by Clement IV., but refused the offer. He died on his way to Lyons to attend a general council for the purpose of uniting the Greek and Latin Churches. He was called, after the fashion of the times, the *angelic doctor*, and was canonized by John XXII. The most important of his numerous works, which were all written in Latin, is the *Summa Theologiæ*, which, although only professing to treat of theology,



Renaissance Arabesque.

is in reality a complete and systematic summary of the knowledge of the time. His disciples were known as *Thomists*.

Aquita'nia, later AQUITAINE, a Roman province in Gaul, which comprehended the countries on the coast from the Garonne to the Pyrenees, and from the sea to Toulouse. It was brought into connection with England by the marriage of Henry II. with Eleanor, daughter of the last Duke of Aquitaine. The title to the province was for long disputed by England and France, but it was finally secured by the latter (1453).

Arabah', a deep rocky valley or depression in north-western Arabia, between the Dead Sea and Gulf of Akabah, a sort of continuation of the Jordan valley.

Arabesque (ar'a-besk), a species of ornamentation for enriching flat surfaces, often consisting of fanciful figures, human or animal, combined with floral forms. There may be said to be three periods and distinctive varieties of arabesque—(a) the Roman or Græco-Roman, introduced into Rome from the East when pure art was declining; (b) the Arabesque of the Moors as seen in the Alhambra, introduced by them into Europe in the middle ages; (c) Modern Arabesque, which took its rise in Italy in the Renaiss-

ance period of art. The arabesques of the Moors, who are prohibited by their religion from representing animal forms, consist essentially of complicated ornamental designs based on the suggestion of plant-growth, combined with extremely complex geometrical forms.

Arabgir (â-râb-gēr'), or ARABKIR', a town in Asiatic Turkey 147 miles w.s.w. of Erzerum, noted for its manufacture of silk and cotton goods. Pop. 17,000.

Ara'bi Pasha, Egyptian soldier and revolutionary leader, b. 1837. In Sept. 1881 he headed a military revolt, and was for a time virtually dictator of Egypt. Britain interfered, and after a short campaign, beginning with the bombardment of Alexandria and ending with the defeat of Arabi and his army at Tel-el-Kebir, he surrendered, and was banished to Ceylon.

Ara'bia, a vast peninsula in the s.w. of Asia, bounded on the n. by the great Syro-Babylonian plain, n.e. by the Persian Gulf and the Sea of Oman, s. or s.e. by the Indian Ocean, and s.w. by the Red Sea and Gulf of Suez. Its length from n.w. to s.e. is about 1800 miles, its mean breadth about 600 miles, its area rather over 1,000,000 sq. m., its pop. probably not more than 5,000,000. Roughly

described, it exhibits a central table-land surrounded by a series of deserts, with numerous scattered oases, while around this is a line of mountains parallel to and approaching the coasts, and with a narrow rim of low grounds (*tehāma*) between them and the sea. In its general features Arabia resembles the Sahara, of which it may be considered a continuation. Like the Sahara it has its wastes of loose sand, its stretches of bare rocks and stones, its mountains devoid of vegetation, its oases with their wells and streams, their palm-groves and cultivated fields—*islands of green amidst the surrounding desolation*. Rivers proper there are none. By the ancients the whole peninsula was broadly divided into three great sections—Arabia Petræa (containing the city Petra), Deserta (desert), and Felix (happy). The first and last of these answer roughly to the modern divisions of the region of Sinai in the n.w. and Yemen in the s.w., while the name *Deserta* was vaguely given to the rest of the country. The principal divisions at the present are Madian in the north-west; south of this, Hejaz, Assir, and Yemen, all on the Red Sea, the last named occupying the south-western part of the peninsula, and comprising a *tehama* or maritime lowland on the shores of the Red Sea, with an elevated inland district of considerable breadth; Hadramaut, on the south coast; Oman occupying the south-east angle; El-Hasa and Koveit on the Persian Gulf; El-Hamad (Desert of Syria), Nefūd, and Jebel Shammar in the north; Nejd, the Central Highlands, which occupies a great part of the interior of the country, while south of it is the great unexplored Dahkna or sandy desert. Madian belongs to Egypt, the Hejaz, Yemen, Bahr-el-Hasa, Koveit, &c., are more or less under the suzerainty of Turkey. The rest of the country is ruled by independent chiefs—sheikhs, emirs, and imāms—while the title of sultan has been assumed by the chief of the Wahabis in Nejd, the sovereign of Oman (who has a subvention from the Indian government), and some petty princes in the south of the peninsula. The chief towns are Mecca, the birthplace of Mohammed; Medina, the place to which he fled from Mecca (A.D. 622), and where he is buried; Mocha, a seaport celebrated for its coffee; Aden, on the s.w. coast, a strongly fortified garrison belonging to Britain; Sana, the capital of Yemen; and Muscat, the capital of Oman, a busy port with a safe anchorage. The

chief towns of the interior are Haïl, the residence of the emir of Northern Nejd; Oneizah, under the same ruler; and Riad, capital of Southern Nejd. The most flourishing portions of Arabia are in Oman, Hadramaut, and Nejd. In the two former are localities with numerous towns and villages and settled industrious populations like that of Hindustan or Europe.

The climate of Arabia in general is marked by extreme heat and dryness. Aridity and barrenness characterize both high and low grounds, and the date-palm is often the only representative of vegetable existence. There are districts which in the course of the year are hardly refreshed by a single shower of rain. Forests there are few or none. Grassy pastures have their place supplied by steppe-like tracts, which are covered for a short season with aromatic herbs, serving as food for the cattle. The date-palm furnishes the staple article of food; the cereals are wheat, barley, maize, and millet; various sorts of fruit flourish; coffee and many aromatic plants and substances, such as gum-arabic, benzoin, mastic, balsam, aloes, myrrh, frankincense, &c., are produced. There are also cultivated in different parts of the peninsula, according to the soil and climate, beans, rice, lentils, tobacco, melons, saffron, colocynth, poppies, olives, &c. Sheep, goats, oxen, the horse, the camel, ass, and mule supply man's domestic and personal wants. Among wild animals are gazelles, ostriches, the lion, panther, hyena, jackal, &c. Among mineral products are saltpetre, mineral pitch, petroleum, salt, sulphur, and several precious stones, as the carnelian, agate, and onyx.

The Arabs, as a race, are of middle stature, of a powerful though slender build, and have a skin of a more or less brownish colour; in towns and the uplands often almost white. Their features are well cut, the nose straight, the forehead high. They are naturally active, intelligent, and courteous; and their character is marked by temperance, bravery, and hospitality. The first religion of the Arabs, the worship of the stars, was supplanted by the doctrines of Mohammedanism, which succeeded rapidly in establishing itself throughout Arabia. Besides the two principal sects of Islam, the Sunnites and the Shiites, there also exists, in considerable numbers, a third Mohammedan sect, the Wahabis, which arose in the latter half of the eighteenth century, and for a time possessed great political importance in the

ARABIA.

peninsula. The mode of life of the Arabs is either nomadic or settled. The nomadic tribes are termed Bedouins (or Bedawins), and among them are considered to be the Arabs of the purest blood. Commerce is largely in the hands of foreigners, among whom the Jews and Banians (Indian merchants) are the most numerous.

The history of the Arabs previous to Mohammed is obscure. The earliest inhab-

itants are believed to have been of the Semitic race. Jews in great numbers migrated into Arabia after the destruction of Jerusalem, and, making numerous proselytes, indirectly favoured the introduction of the doctrines of Mohammed. With his advent the Arabians arose and united for the purpose of extending the new creed; and under the caliphs—the successors of Mohammed—they attained great power, and



BEDOUIN ARABS.

1, 2, Of the Jordan. 3, Of the Haûran. 4, 5, Of the Desert—Arabia Petræa.

founded large and powerful kingdoms in three continents. (See *Caliphs*.) On the fall of the caliphate of Bagdad in 1258 the decline set in, and on the expulsion of the Moors from Spain the foreign rule of the Arabs came to an end. In the sixteenth century Turkey subjected Hejaz and Yemen, and received the nominal submission of the tribes inhabiting the rest of Arabia. The subjection of Hejaz has continued down to the present day; but Yemen achieved its independence in the seventeenth century, and maintained it till 1871, when the territory again fell into the hands of the Turks. In 1839 Aden was occupied by the British. Oman early became virtually independent of the caliphs, and grew into a well-organized kingdom. In 1507 its capital, Maskat or Muscat, was occupied by the Portuguese, who were not driven out till 1659. The

Wahabis appeared towards the end of the eighteenth century, and took an important part in the political affairs of Arabia, but their progress was interrupted by Mohammed Ali, pasha of Egypt, and they suffered a complete defeat by Ibrahim Pasha. He extended his power over most of the country, but the events of 1840 in Syria compelled him to renounce all claims to Arabia. The Hejaz thus again became subject to Turkish sway. Turkey has since extended its rule not only over Yemen, but also over the district of El-Hasa on the Persian Gulf.

Arabian Language and Literature.—The Arabic language belongs to the Semitic dialects, among which it is distinguished for its richness, softness, and high degree of development. By the spread of Islam it became the sole written language and the prevailing speech in all south-western Asia and eastern

and northern Africa, and for a time in southern Spain, in Malta, and in Sicily; and it is still used as a learned and sacred language wherever Islam is spread. Almost a third part of the Persian vocabulary consists of Arabic words, and there is the same proportion of Arabic in Turkish. The Arabic language is written in an alphabet of its own, which has also been adopted in writing Persian, Hindustani, Turkish, &c. As in all Semitic languages (except the Ethiopic), it is read from right to left. The vowels are usually omitted in Arabic manuscripts, only the consonants being written.

Poetry among the Arabs had a very early development, and before the time of Mohammed poetical contests were held and prizes awarded for the best pieces. The collection called the *Moallakât* contains seven pre-Mohammedan poems by seven authors. Many other poems belonging to the time before Mohammed, some of equal age with those of the *Moallakât*, are also preserved in collections. Mohammed gave a new direction to Arab literature. The rules of faith and life which he laid down were collected by Abu-Bekr, first caliph after his death, and published by Othman, the third caliph, and constitute the *Koran*—the Mohammedan Bible. The progress of the Arabs in literature, the arts and sciences, may be said to have begun with the government of the caliphs of the family of the Abbassides, A.D. 749, at Bagdad, several of whom, as Harun al Rashid and Al Mamun, were munificent patrons of learning: and their example was followed by the Omniades in Spain. In Spain were established numerous academies and schools, which were visited by students from other European countries; and important works were written on geography, history, philosophy, medicine, physics, mathematics, arithmetic, geometry, and astronomy. Most of the geography in the middle ages is the work of the Arabians, and their historians since the eighth century have been very numerous. The philosophy of the Arabians was of Greek origin, and derived principally from that of Aristotle. Numerous translations of the scientific works of Aristotle and other Greek philosophers were made principally by Christian scholars who resided as physicians at the courts of the caliphs. These were diligently studied in Bagdad, Damascus, and Cordova, and, being translated into Latin, became known in the west of Europe. Of their philosophical authors the most cele-

brated are Alfarabi (tenth century), Ibn Sina or Avicenna (died A.D. 1037), Alhazzali (died 1111), Ibn Roshd or Averroes (twelfth century), called by pre-eminence The Commentator, &c. In medicine they excelled all other nations in the middle ages, and they are commonly regarded as the earliest experimenters in chemistry. Their mathematics and astronomy were based on the works of Greek writers, but the former they enriched, simplified, and extended. It was by them that algebra (a name of Arabic origin) was introduced to the western peoples, and the Arabic numerals were similarly introduced. Astronomy they especially cultivated, for which famous schools and observatories were erected at Bagdad and Cordova. The *Almagest* of Ptolemy in an Arabic translation was early a text-book among them. Alongside of science poetry continued to be cultivated, but after the ninth or tenth centuries it grew more and more artificial. Among poets were Abu Nowas, Asmai, Abu Temnam, Motenabbi, Abul-Ala, Busiri, Tograi, and Hariri. Tales and romances in prose and verse were written. The tales of fairies, genii, enchanters, and sorcerers in particular, passed from the Arabians to the western nations, as in *The Thousand and One Nights*. Some of the books most widely read in the middle ages, such as *The Seven Wise Masters* and the *Fables of Pilpay* or *Bidpai*, found their way into Europe through the instrumentality of the Arabs. At the present day Arabic literature is almost confined to the production of commentaries and scholia, discussions on points of dogma and jurisprudence, and grammatical works on the classical language. There are a few newspapers published in Arabic.

Arabian Architecture. See *Moorish Architecture*, *Saracenic Architecture*.

Arabian Gulf. See *Red Sea*.

Arabian Nights; or *THE THOUSAND AND ONE NIGHTS*, a celebrated collection of Eastern tales, long current in the East, and supposed to have been derived by the Arabians from India, through the medium of Persia. They were first introduced into Europe in the beginning of the eighteenth century by means of the French translation of Antoine Galland. Of some of them no original MS. is known to exist; they were taken down by Galland from the oral communication of a Syrian friend. The story which connects the tales of the *Thousand and One Nights* is as follows:—The Sultan Shahriyar, exasperated by the faithlessness

of his bride, made a law that every one of his future wives should be put to death the morning after marriage. At length one of them, Shahrazad, the generous daughter of the grand-vizier, succeeded in abolishing the cruel custom. By the charm of her stories the fair narrator induced the sultan to defer her execution every day till the dawn of another, by breaking off in the middle of an interesting tale which she had begun to relate. In the form we possess them these tales belong to a comparatively late period, though the exact date of their composition is not known. Lane, who published a translation of a number of the tales, with valuable notes, is of opinion that they took their present form some time between 1475 and 1525. Two complete English translations have recently been printed, giving many passages that previous translators had omitted on the score of morality or decency.

Arabian Sea, the part of the Indian Ocean between Arabia and India.

Arabic Figures, the characters 1, 2, 3, 4, 5, 6, 7, 8, 9, 0; of Indian origin, introduced into Europe by the Moors. They did not come into general use till after the invention of printing.

Arable Land, land which is wholly or chiefly cultivated by the plough, as distinguished from grass-land, wood-land, common pasture, and waste.

Aracacha, or **ARRACACHA** (ar-a-kä'cha), a genus of umbelliferous plants of Southern and Central America. The root of *A. esculenta* is divided into several lobes, each of which is about the size of a large carrot. These are boiled like potatoes and largely eaten in South America.

Aracan (ar-a-kan'), the most northern division of Lower Burmah, on the Bay of Bengal; area, 14,526 sq. miles; pop. 587,518. Ceded to the English in 1826, as a result of the first Burmese war.

Araçari (ä-rä-sä'rē), native name of a genus of brilliant birds (*Pteroglossus*) closely allied to the toucans, but generally smaller; natives of the warm parts of S. America.

Aracati (ä-rä-kä-tē'), a Brazilian river-port, prov. of Ceará, on the river Jaguaribe, about 10 miles from its mouth. Exports hides and cotton. Pop. about 6000.

Ara'ceæ, a natural order of monocotyledonous plants, mostly tropical, having the genus *Arum* as the type. Most of the species have tuberous roots abounding in starch, which forms a wholesome food after the acrid

(and even poisonous) juice has been washed out. See *Arum*, *Caladium*, *Dumb-cane*.

Arachis (ar'a-kis), a genus of leguminous plants much cultivated in warm climates, and esteemed a valuable article of food. The most remarkable feature of the genus is that when the flower falls the stalk supporting the small undeveloped fruit lengthens, and bending towards the ground pushes the fruit into the ground, when it begins to enlarge and ripen. The pod of *A. hypogæa* (popularly called ground, earth, or pea nut) is of a pale yellow colour, and contains two seeds the size of a hazel-nut, in flavour sweet as almonds, and yielding when pressed an excellent oil.

Arachnida (a-rak'ni-da; Greek, *arachnē*, a spider), a class of Arthropoda or higher Annulose animals, including the Spiders, Scorpions, Mites, Ticks, &c. They have the body divided into a number of segments or *somites*, some of which have always articulated appendages (limbs, &c.). There is often a pair of nervous ganglia in each somite, although in some forms (as spiders) the nervous system becomes modified and concentrated. They are oviparous and somewhat resemble insects, but they have a united head and thorax, and do not undergo a metamorphosis similar to insects. They respire by tracheæ, or by pulmonary sacs, or by the skin.

Ar'ack, **AR'RACK**, a spirituous liquor manufactured in the East Indies from a great variety of substances. It is often distilled from fermented rice, or it may be distilled from the juice of the cocoa-nut and other palms. Pure arack is clear and transparent, with a yellowish or straw colour, and a peculiar but agreeable taste and smell; it contains at least 52 to 54 per cent of alcohol.

Arad (o'rod), a town of Hungary, on the Maros, 30 miles north of Temeswar, divided by the river into O (Old) Arad and Uj (New) Arad, connected by a bridge; it has a fortress, and is an important railway centre, with a large trade and manufactures. Pop., Old Arad, 35,556; New Arad, 5141.

Ar'adus (now *Ruad*), an islet about a mile in circumference lying 2 miles off the Syrian coast, 35 miles N. of Tripoli; the site of the Phœnician stronghold Arvad, a city second only to Tyre and Sidon; now occupied by about 3000 people, mainly fishermen.

Arafat', or **JEBEL ER RAHMEH** ('Mountain of Mercy'), a hill in Arabia, about 200 feet

high, with stone steps reaching to the summit, 15 miles south-east of Mecca; one of the principal objects of pilgrimage among Mohammedans, who say that it was the place where Adam first received his wife Eve after they had been expelled from Paradise and separated from each other 120 years. A sermon delivered on the mount constitutes the main ceremony of the Hadj or pilgrimage to Mecca, and entitles the hearer to the name and privileges of a Hadji or pilgrim.

Ar'ago, DOMINIQUE FRANÇOIS, a French physicist, born in 1786; died at Paris in 1853. After studying in the Polytechnic School at Paris, he was appointed a secretary of the Bureau des Longitudes. In 1806 he was associated with Biot in completing in Spain the measurements of Delambre and Mechain to obtain an arc of the meridian. Before he got back to France he had been shipwrecked and narrowly escaped being enslaved at Algiers. In 1809 he was elected to the Academy of Sciences, and appointed a professor of the Polytechnic School. He distinguished himself by his researches in the polarization of light, galvanism, magnetism, astronomy, &c. His discovery of the magnetic properties of substances devoid of iron, made known to the Academy of Sciences in 1824, procured him the Copley medal of the Royal Society of London in 1825. A further consideration of the same subject led to the equally remarkable discovery of the production of magnetism by electricity. He took part in the revolution of 1848, and held the office of minister of war and marine in the provisional government. At the *coup d'état* of Dec. 1852, he refused to take the oath to the government of Louis Napoleon, but the oath was not pressed. His works, which were posthumously collected and published, consist, besides his *Astronomie Populaire*, chiefly of contributions to learned societies, and biographical notices (*éloges*) of deceased members of the Academy of Sciences.

Arago, EMMANUEL, son of Dominique François, French advocate and politician, was born at Paris in 1812; called to the bar 1837; took part in the revolution of 1848; renounced politics after the *coup d'état* of Dec. 1852, but continued to practise at the bar. After the fall of the empire he again took a prominent part in public affairs, and held several important offices. He is author of a volume of poems and many theatrical pieces.

Arago, ÉTIENNE, brother of Dominique Arago, was born in 1802. He founded the journals *La Reforme* and *Le Figaro*; was director of the Théâtre du Vaudeville, 1829; took part in the revolution of 1848; was condemned to transportation, 1849; fled from France, but returned in 1859; was mayor of Paris during the German war, and appointed archivist to the École des Beaux Arts, 1878. He is author of upwards of 100 dramas; *La Vie de Molière*; *Les Bleus et les Blancs*, and other works. He died March 6, 1892.

Aragon', KINGDOM OF, a former province or kingdom of Spain, now divided into the three provinces of Teruel, Huesca, and Saragossa; bounded on the N. by the Pyrenees, N.W. by Navarre, W. by Castile, S. by Valencia, and E. by Catalonia; length about 190 miles, average breadth 90 miles; area, 14,726 sq. miles. It was governed by its own monarchs until the union with Castile on the marriage of Ferdinand and Isabella (1469). Pop. 909,261.

Arago'na, a town in Sicily, 8 miles N.N.E. of Girgenti. Pop. 7947. In the neighbourhood is the mud volcano of Maccubula.

Araguaya (à-rà-gwí'à), a Brazilian river, principal affluent of the Tocantins; rises about the 18th degree of S. lat.; in its course northwards forms the boundary between the provinces of Matto Grosso and Goyaz, and falls into the Tocantins near lat. 6° S.; length, about 1300 miles, of which over 1000 are navigable.

A'ral, a salt-water lake in Asia, in Russian territory, about 150 miles W. of the Caspian Sea, between 43° 42' and 46° 44' N. lat., and 58° 18' and 61° 46' E. lon.; length 270 miles, breadth 165; area, 26,650 sq. miles (or not much smaller than Scotland). It stands 240 feet above the level of the Caspian, and 160 feet above the Mediterranean. It receives the Amoo Daria or Oxus and the Sir Daria or Jaxartes, and contains a multitude of sturgeon and other fish. It is encircled by desert sandy tracts, and its shores are without harbours. It has no outlet. The Aral contains a large number of small islands; steamers have been placed on it by the Russians.

Ara'lia, a genus of plants with small flowers arranged in umbels and succulent berries, the type of the nat. order Araliaceæ, which is nearly related to the Umbelliferæ, but the species are of a more shrubby habit. They are natives chiefly of tropical or sub-tropical countries, and in Britain are represented by the ivy; ginseng belongs to the

order. From the pith of *A. papyrifera* is obtained the Chinese rice-paper.

A'ram, EUGENE, a self-taught scholar whose unhappy fate has been made the subject of a ballad by Hood and a romance by Lord Lytton, was born in Yorkshire, 1704, executed for murder, 1759. In 1734 he set up a school at Knaresborough. About 1745 a shoemaker of that place, named Daniel Clarke, was suddenly missing under suspicious circumstances; and no light was thrown on the matter till full thirteen years afterwards, when an expression dropped by one Richard Houseman respecting the discovery of a skeleton supposed to be Clarke's, caused him to be taken into custody. From his confession an order was issued for the apprehension of Aran, who had long quitted Yorkshire, and was at the time acting as usher at the grammar-school at Lynn. He was brought to trial on the 3d of August, 1759, at York, where, notwithstanding an able and eloquent defence which he made before the court, he was convicted of the murder of Clarke, and sentenced to death. He was among the first to recognize the affinity of the Celtic to the other European languages, and under favourable circumstances might have done some valuable work in philological science.

Aramæ'an, or ARAMAIC, a Semitic language nearly allied to the Hebrew and Phœnician, anciently spoken in Syria and Palestine and eastwards to the Euphrates and Tigris, being the official language of this region under the Persian domination. In Palestine it supplanted Hebrew, and it was it and not the latter that was the tongue of the Jews in the time of Christ. Parts of Daniel and Ezra are written in Aramaic, or, as this form of it is often incorrectly named, Chaldee, from an old notion that the Jews brought from Babylon. An important Aramaic dialect is the Syriac, in which there is an extensive Christian literature. See *Chaldee*, *Syriac*.

Ar'an, an island lying off the w. coast of Donegal, Ireland, has an area of 4335 acres, a lighthouse, and a pop. of 1163, chiefly engaged in fishing.—Also called *North Island of Aran*, or *Arranmore*.

Arane'idæ, the spider family.

Aran Islands, or SOUTH ISLANDS OF ARAN, three islands at the mouth of Galway Bay, off the w. coast of Ireland. The largest, Aranmore or Inishmore, comprises 7635 acres, and has a pop. of 2122; the next, Inishmaan, 2252 acres, pop. 443; and

the least, Inishere, 1400 acres, pop. 493. They are remarkable for a number of architectural remains of a very early date. The inhabitants chiefly engaged in agriculture and fishing.

Aranjuez (â-rân-hü-eth'), a small town and palace in Spain, 30 miles from Madrid, with splendid gardens laid out by Philip II. The court used to reside here from Easter till the close of June, when the number of people increased from 4000 to about 20,000.

Arany (o-ron'y), JANOS, Hungarian poet, born 1819, died 1882. He was for some time a strolling player, but became professor of Latin at the Normal School of Szalonta, professor of Hungarian literature at Nagy Körös, and secretary of the Hungarian Academy. Author of *The Lost Constitution*; *Katalin*; and a series of three connected narrative poems on the fortunes of Toldi, the Samson of Hungarian folk-lore; &c.

Arap'ahoes, a tribe of American Indians located near the head-waters of the Arkansas and Platte rivers, not now of any importance.

Arapaima (a-ra-pi'ma), a genus of South American fresh-water fishes, order Physostomi, family Osteoglossidæ, one species of which (*A. gigas*) grows to the length of 15 or 16 feet, and forms a valuable article of food in Brazil and Guiana. It is covered with large bony scales, and has a bare and bony head.

Ar'arat, a celebrated mountain in Armenia, forming the point of contact of Russia with Turkey and Persia; an isolated volcanic mass showing two separate cones known as the Great and Little Ararat, resting on a common base and separated by a deep intervening depression. The elevations are: Great Ararat, 16,916 feet; Little Ararat, 12,840 feet; the connecting ridge, 8780 feet. Vegetation extends to 14,200 feet, which marks the snow-line. According to tradition Mount Ararat was the resting-place of the ark when the waters of the flood abated.

Araro'ba, ARRAROBA, the powdered bark of *Andira araroba*. See *Andira*.

A'ras (the ancient *Araxes*), a river of Armenia, rising s. of Erzerum at the foot of the Bingol-dagh; it flows for some miles through Turkish territory north-east to the new Russian frontier. Here it turns eastwards to the Erivan plain n. of Ararat, whence it sweeps in a semicircle mostly between the Russian and Persian territories round to its confluence with the Kur, 60

miles from its mouth in the Caspian; length, 500 miles.

Ara'tus, a Greek poet, born at Soli in Cilicia; flourished about 270 B.C., was a favourite of Ptolemy Philadelphus. His poem *Phænomena* is a version of a prose work on astronomy by Eudoxus; one verse of it is quoted by St. Paul in his address to the Athenians (Acts xvii. 28).

Ara'tus OF SICYON, a statesman of ancient Greece, born 272 B.C. In 251 B.C. he overthrew the tyrant of Sicyon and joined it to the Achæan League, which he greatly extended. He accepted the aid of Antigonos Doson, king of Macedon, against the Spartans, and became in time little more than the adviser of the Macedonian king, who had now made the League dependent on himself. He is said to have been poisoned by Philip V. of Macedon, 213 B.C.

Arauca'nians, a South American native race in the southern part of Chili, occupying a territory stretching from about 37° to 40° of s. lat. They are warlike and more civilized than many of the native races of S. America, and maintained almost unceasing war with the Spaniards from 1537 to 1773, when their independence was recognized by Spain, though their territory was much curtailed. Their early contests with the Spaniards were celebrated in Ercilla's Spanish poem *Araucana*. With the republic of Chili they were long at feud, and latterly had at their head a French adventurer named Tonneins, who claimed the title of king. In 1882 they submitted to Chili. The Chilian province of Arauco receives its name from them.

Arauca'ria, a genus of trees of the coniferous or pine order, belonging to the southern hemisphere. The species are large evergreen trees with pretty large, stiff, flattened, and generally imbricated leaves, verticillate spreading branches, and bearing large cones, each scale having a single large seed. The species best known in Britain is *A. imbricatâ* (the Chili pine or puzzle-monkey), which is quite hardy. It is a native of the mountains of southern Chili, where it forms vast forests and yields a hard durable wood. Its seeds are eaten when roasted. The Moreton Bay pine of N. S. Wales (*A. Cunninghamii*) supplies a valuable timber used in house and boat building, in making furniture, and in other carpenter work. A species, *A. excelsa*, or Norfolk Island pine abounds in several of the South Sea Islands, where it attains a height of 220 feet with a

circumference of 30 feet, and is described as one of the most beautiful of trees. Its foliage is light and graceful, and quite unlike that of *A. imbricata*, having nothing of its stiff formality. Its timber is of some value, being white, tough, and close-grained.

Arau'co, a prov. of Chili, named from the Araucanian Indians; area, 4246 sq. miles; pop. 1891, 86,236; capital, Lebu.

Araval'li Hills, a range of Indian mountains running N.E. and S.W. across the Rajputâna country, which they separate into two natural divisions—desert plains on the N.W. and fertile lands on the S.E.; highest point, Mount Abu (5653 feet).

Araxes. See *Aras*.

Ar'bâces, one of the generals of Sardana-pâlus, king of Assyria. He revolted and defeated his master, and became the founder of the Median empire in 846 B.C.

Ar'balist, a cross-bow.

Arbe'la (now *Erbil*), a place in the Turkish vilayet of Bagdad, giving name to the decisive battle fought by Alexander the Great against Darius, at Gaugamela, about 20 miles distant from it, October 1, B.C. 331.

Arbitrage (âr'bi-trâzh), same as *arbitration of exchanges*. See next article. *Arbitrageur* (âr'bi-trâ-zheur) is one who makes calculations of currency exchanges.

Arbitra'tion, the hearing and determination of a cause between parties in controversy, by a person or persons chosen by the parties. This may be done by one person, but it is common to choose more than one. Frequently two are nominated, one by each party, with a third, the *umpire* (or, in Scotland, sometimes the *oversman*), who is called on to decide in case of the primary arbitrators differing. In such a case the umpire may be agreed upon either by the parties themselves, or by the arbitrators, when they have received authority from the parties to the dispute to settle this point. The determination of arbitrators is called an *award*. It has the effect of a judgment, subject to appeal, which may be entered at any time within twenty days from the filing of such award. Arbitration in international affairs has many advocates for its adoption as a substitute for war, but so far questions of only secondary importance have been thus determined. The case of the privateer General Armstrong, in which the first Napoleon acted as arbitrator, was one of the first arbitration cases in American history. The Alabama claims, and more recently the Behring sea fisheries dispute, were set-

ted in this way.—*Arbitration of exchanges*, an operation or calculation by which the currency of one country is converted into that of another through the medium of intervening currencies, for the purpose of ascertaining whether direct or indirect drafts and remittances are preferable.

Ar'blay, MADAME D', originally Miss Frances Burney, born in 1752 at Lynn-Regis in Norfolk, died at Bath 1840. She gained considerable celebrity by her literary productions, including four novels—*Evelina*, *Cecilia*, *Camilla*, and *The Wanderer*. She published the memoirs of her father, which appeared in 1832, and her *Diary*, edited by her niece, was also published.

Arbor Day, a day designated by legislative enactment, in the different States, for the voluntary planting of trees by the people; the pupils in the public schools now take part in the observance of the day. It was inaugurated in 1874 by the Nebraska State Board of Agriculture. Thirty-seven States have already established an annual Arbor Day, and observe it as a legal holiday.

Arbore'tum (Lat. *arbor*, a tree), a place in which a collection of different trees and shrubs is cultivated for scientific or educational purposes.

Ar'boriculture includes the culture of trees and shrubs, as well as all that pertains to the preparation of the soil, the sowing of the seeds, and the treatment of the plants in their young state, the preparation of the land previous to their final transplantation, their just adaptation to soil and situation, their relative growth and progress to maturity, their management during growth, and the proper season and period for felling them.

Arbor Vitæ (lit. 'tree of life'), the name of several coniferous trees of the genus *Thuja*, allied to the cypress, with flattened branchlets, and small imbricated or scale-like leaves. The common Arbor Vitæ (*Thuja occidentālis*) is a native of North America, where it grows to the height of 40 or 50 feet. The young twigs have an agreeable balsamic smell. The Chinese Arbor Vitæ (*Thuja orientālis*), common in Britain, yields a resin which was formerly thought to have medicinal virtues.

Arbroath (ar-brōth'), or ABERBROTHOCK, a royal and parliamentary burgh and seaport in the county of Forfar, Scotland, at the mouth of the small river Brothock. Its

ancient abbey, founded by William the Lion in 1178, and dedicated to Saints Mary and Thomas à Becket, is now a picturesque ruin. There are numerous flax and hemp spinning-mills and factories, and much canvas and linen is made; also tanning, shoemaking, and fishing, and a small shipping trade, but the harbour is bad. Pop. 22,960. It unites with Montrose, Forfar, Brechin, and Bervie (the Montrose burghs) in sending a member to parliament.

Arbuth'not, JOHN, an eminent physician and distinguished wit, born at Arbuthnot, Kincardineshire, Scotland, 1667; died 1735. He received the degree of Doctor of Medicine at the University of St. Andrews; and went to London, where he soon distinguished himself by his writings and by his skill in his profession. In 1704 he was chosen fellow of the Royal Society, and soon after he was appointed physician extraordinary, and then physician in ordinary to Queen Anne. About this time he became intimate with Swift, Pope, Gay, and other wits of the day. His writings, other than professional or scientific, include his contributions (in conjunction with Swift and Pope) to the *Memoirs of Martinus Scriblerus*, *History of John Bull*, *Art of Political Lying*, &c. He was conspicuous not only for learning and wit, but also for worth and humanity.

Ar'butus, a genus of plants belonging to the Ericacææ, or heath order, and comprising a number of small trees and shrubs, natives chiefly of Europe and N. America. *Arbütus Unědo* abounds near the lakes of Killarney, where its fine foliage adds charms to the scenery. The bright red or yellow berries, somewhat like the strawberry, have an unpleasant taste and narcotic properties. The Corsicans make wine from them. The trailing arbutus or may-flower of N. America, a plant with fragrant and beautiful blossoms, is *Epigæa repens*, of the same nat. order.

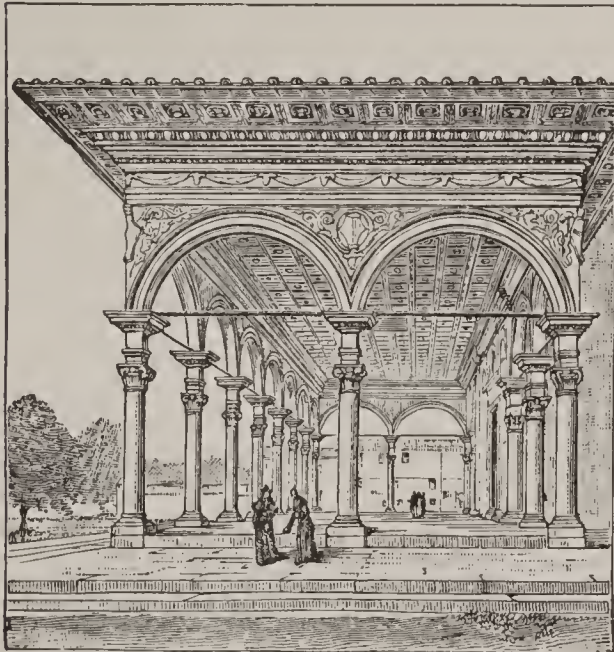
Arc, a portion of a curve line, especially of a circle. It is by means of circular arcs that all angles are measured.—*Electric* or *Voltaic arc*, the luminous arch of intense brightness and excessively high temperature which is formed by an electric current in crossing over the interval of space between the carbon points of an electric lamp. See *Arc-light*.

Arc, JEANNE D'. See *Joan of Arc*.

Ar'ca, a genus of bivalve molluscs, family Arcadæ, whose shells are known as *ark-shells*.

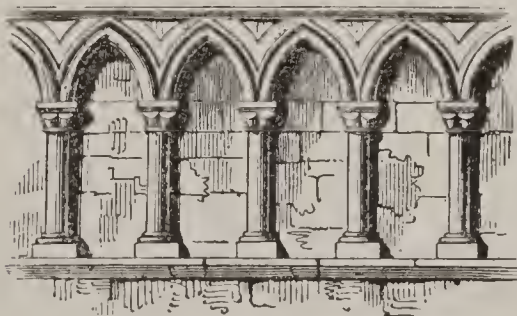
Arcachon (är-kä-shō'), a town of S.W. France, dep. Gironde, on the almost land-locked basin of Arcachon, a much-frequented bathing-place, with great oyster-rearing establishments. The town stretches along the shore, and is sheltered by sand-hills and pine-woods. It is connected by railway with Bordeaux. Pop. 7000.

Arcade, a series of arches supported on piers or pillars, used generally as a screen



Arcade—Portico of S. Maria delle Grazie, near Arezzo.

and support of a roof, or of the wall of a building, and having beneath the covered part an ambulatory as round a cloister, or a foot-path with shops or dwellings, as frequently seen in old Italian towns. Sometimes a porch or other prominent part of an important



Arcade, Romsey Church, Hampshire.

building is treated with arcades, as in the illustration. At the present day Bologna, Padua, and Berne have fine examples of mediæval arcaded streets, and among more modern work various streets in Turin and the Rue de Rivoli, Paris, are lined with arcades, with shops underneath. In mediæ-

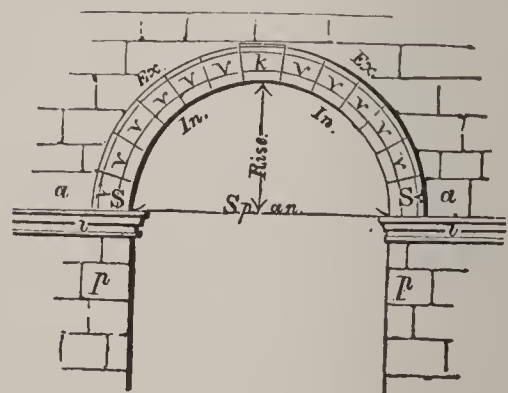
val architecture the term arcade is also applied to a series of arches supported on pillars forming an ornamental dressing or enrichment of a wall, a mode of treatment of very frequent occurrence in the towers, apses, and other parts of churches. In modern use the name arcade is often applied to a passage or narrow street containing shops arched over and covered with glass, as for example the Burlington Arcade, London, and the Galleria Vittorio Emmanuele in Milan.

Arca'dia, the central and most mountainous portion of the Peloponnesus (Morea), the inhabitants of which in ancient times were celebrated for simplicity of character and manners. Their occupation was almost entirely pastoral, and thus the country came to be regarded as typical of rural simplicity and happiness. At the present day Arcadia forms a nomarchy of the Kingdom of Greece. Area, 2028 sq. miles; pop. 148,600.

Arca'dius, born in 377, died 408; son of the Emperor Theodosius, on whose death in 395 the empire was divided, he obtaining the East, and his brother Honorius the West. He proved a feeble and pusillanimous prince.

Arcesilaus (är-ses-i-lā'us), a Greek philosopher, the founder of the second or middle academy, was born about 315 B.C., died 239 B.C. He left no writings, and of his opinions so little is known that it has been doubted whether he was a strict Platonist or a sceptic.

Arch, a structure composed of separate pieces, such as stones or bricks, having the

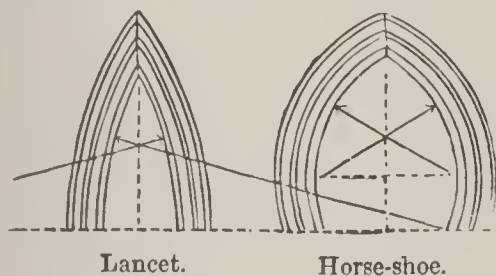


Parts of an Arch.

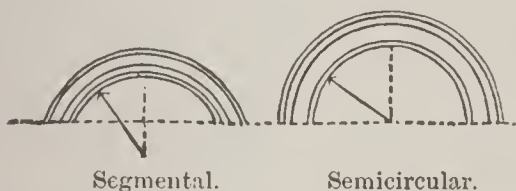
a, Abutments.	i, Impost.	p, Piers.
v, Voussoirs or arch-stones.	In. Intrados.	k, Keystone.
s, Springers.		Ex. Extrados.

shape of truncated wedges, arranged on a curved line, so as to retain their position by mutual pressure. The separate stones which compose the curve of an arch are called *voussoirs* or *arch-stones*; the extreme or

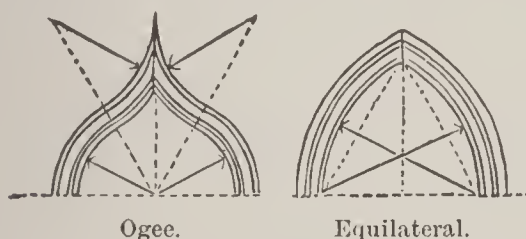
lowest voussoirs are termed *springers*, and the uppermost or central one is called the *keystone*. The under or concave side of the voussoirs is called the *intrados*, and the



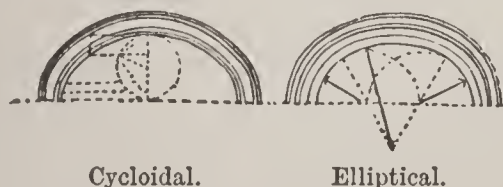
upper or convex side the *extrados* of the arch. The supports which afford resting and resisting points to the arch are called *piers* and *abutments*. The upper part of the pier or abutment where the arch rests—technically where it *springs from*—is the



impost. The *span* of an arch is in circular arches the length of its chord, and generally the width between the points of its opposite imposts whence it springs. The *rise* of an arch is the height of the highest point of its intrados above the line of the



imposts; this point is sometimes called the *under side of the crown*, the highest point of the extrados being the *crown*. Arches are designated in various ways, as from their shape (circular, elliptic, &c.), or from the resemblance of the whole contour of the



curve to some familiar object (lancet arch, horse-shoe arch), or from the method used in describing the curve, as equilateral, three-centred, four-centred, ogee, and the

like; or from the style of architecture to which they belong, as Roman, pointed, and Saracenic arches.—*Triumphal arch*, originally a simple decorated arch under which a victorious Roman general and army passed in triumph. At a later period the triumphal arch was a richly sculptured, massive, and permanent structure, having an archway passing through it, with generally a smaller arch on either side. The name is sometimes given to an arch, generally of wood decorated with flowers or evergreens, erected on occasion of some public rejoicing, &c.

Archæan (är-kē'an) **Rocks** (Gr. *archaios*, ancient), the oldest rocks of the earth's crust, crystalline in character, and embracing granite, syenite, gneiss, mica-schist, &c., all devoid of fossil remains. These rocks underlie and are distinctly separate from the stratified and fossiliferous formations, which indeed have chiefly taken origin from them.

Archæology (Gr. *archaios*, ancient, and *logos*, a discourse), the science which takes cognizance of the history of nations and peoples as evinced by the remains, architectural, implemental, or otherwise, which belong to the earlier epoch of their existence. In a more extended sense the term embraces every branch of knowledge which bears on the origin, religion, laws, language, science, arts, and literature of ancient peoples. It is to a great extent synonymous with *prehistoric annals*, as a large if not the principal part of its field of study extends over those periods in the history of the human race in regard to which we possess almost no information derivable from written records. Archæology divides the primeval period of the human race, more especially as exhibited by remains found in Europe, into the *stone*, the *bronze*, and the *iron* age, these names being given in accordance with the materials employed for weapons, implements, &c., during the particular period. The *stone* age has been subdivided into the *palæolithic* and *neolithic*, the former being that older period, in which the stone implements were not polished as they are in the latter and more recent period. The *bronze* age, which admits of a similar subdivision, is that in which implements were of copper or bronze. In this age the dead were burned and their ashes deposited in urns or stone chests, covered with conical mounds of earth or cairns of stones. Gold and amber ornaments appear in this age. The *iron* age is that in which implements,

&c., of iron begin to appear, although stone and bronze implements are found along with them. The word *age* in this sense (as explained under *Age*) simply denotes the stage at which a people has arrived. The phrase stone age, therefore, merely marks the period before the use of bronze, the bronze age that before the employment of iron, among any specific people.

Archæopteryx (är-kē-op'te-riks), a unique fossil bird from the oolitic limestone of Solenhofen, of the size of a rook, and differing from all known birds in having two free claws representing the thumb and forefinger projecting from the wing, and about twenty tail vertebræ free and prolonged as in mammals.

Archangel (ärk'än-jel; Gr. prefix, *arch-*, denoting chief), an angel of superior or of the highest rank. The only archangel mentioned by name in Scripture is Michael in the Epistle of Jude.

Archangel (ärk'än-jel), a seaport, capital of the Russian government of same name, on the right bank of the northern Dwina, about 20 miles above its mouth in the White Sea. Below the town the river divides into several branches and forms a number of islands, on one of which, called Sollenbole, is the harbour. The houses are mostly of wood; the place has some manufactures and an important trade, exporting linseed, flax, tow, tallow, train-oil, mats, timber, pitch and tar, &c. The port is closed for six months by ice. Archangel, founded in 1584, was long the only port which Russia possessed. Pop. 19,540. —The province has an area of 331,490 sq. miles; pop. 1889, 340,251.

Archangel'ica. See *Angelica*.

Archbishop (ärch-), a chief bishop, or bishop over other bishops; a metropolitan prelate. The establishment of this dignity is to be traced up to an early period of Christianity, when the bishops and inferior clergy met in the capitals to deliberate on spiritual affairs, and the bishop of the city where the meeting was held presided. In England there are two (Protestant) archbishops — those of Canterbury and York; the former styled *Primate of all England*, the latter *Primate of England*. The Archbishop of Canterbury is the first peer of the realm, having precedence before all great officers of the crown and all dukes not of royal birth. He crowns the sovereign, and when he is invested with his archbishopric he is said to be enthroned. He can grant special licenses

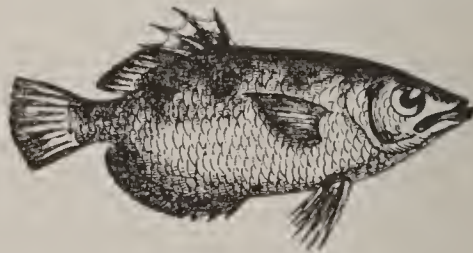
to marry at any time or place, and can confer all the degrees that may be obtained from the universities. He is addressed by the titles of *your grace* and *most reverend father in God*, and writes himself *by divine providence*, while the bishop only writes *by divine permission*. The first Archbishop of Canterbury was Augustine, appointed A.D. 598 by Ethelbert. Next in dignity is the Archbishop of York, between whom and the Archbishop of Canterbury the Lord High-chancellor of England has his place in precedence. The incomes of these two prelates are £15,000 and £10,000 respectively. Scotland had two archbishops — those of St. Andrews and Glasgow. Ireland had four — Dublin, Armagh, Tuam, and Cashel. In the United States there are thirteen (Roman Catholic) archdioceses.

Archdeacon (ärch-), in England, an ecclesiastical dignitary next in rank below a bishop, who has jurisdiction either over a part of or over the whole diocese. He is usually appointed by the bishop, under whom he performs various duties, and he holds a court which decides cases subject to an appeal to the bishop.

Archduke, a prince belonging to the reigning family of Austria.

Archelaus (är-kē-lä'us), the name of several personages in ancient history, one of whom was the son of Herod the Great. He received from Augustus the sovereignty of Judea, Samaria, and Idumea. The people, tired of his tyrannical and bloody reign, accused him before Augustus, who banished him to Gaul.

Archer-fish, a name given to the *Toxotes jaculātor*, a scaly-finned, acanthopterygian



Archer-fish (*Toxotes jaculātor*).

fish, about 6 inches long, inhabiting the seas around Java, which has the faculty of shooting drops of water to the distance of 3 or 4 feet at insects, thereby causing them to fall into the water, when it seizes and devours them. The soft, and even the spiny portion of their dorsal fins are so covered with scales as to be scarcely distinguishable from the rest of the body.

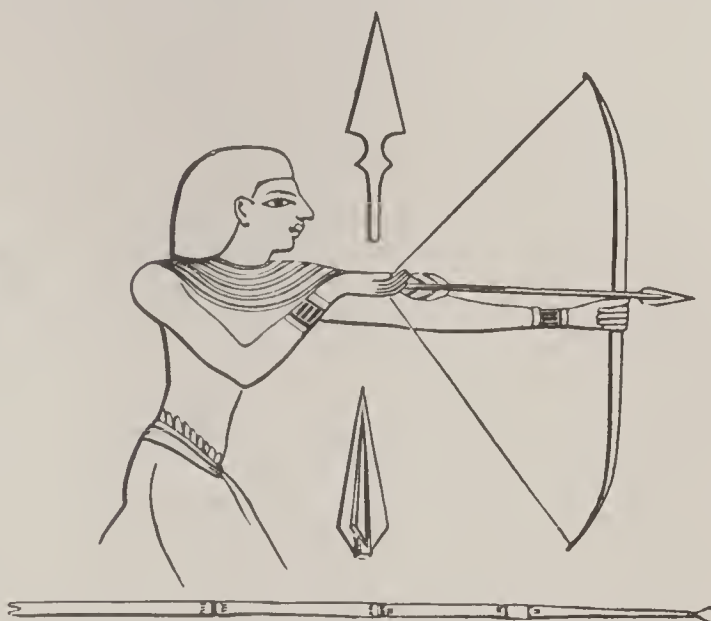
ARCHERY — ARCHILOCHUS.

Arch'ery, the art of shooting with a bow and arrow. The use of these weapons in war and the chase dates from the earliest antiquity. Ishmael, we learn from Gen. xxi., 'became an archer.' The Egyptians, Assyrians, Persians, Parthians, excelled in the use of the bow; and while the Greeks and Romans themselves made little use of it, they employed foreign archers as mercenaries. Coming to much more recent times, we find the Swiss famous as archers, but they generally used the arbalist or cross-bow, and were

no match for their English rivals, who preferred the long-bow. (See *Bow*.) The English victories of Cressy, Poitiers, and Agincourt, gained against apparently overwhelming odds, may be ascribed to the bowmen. Archery disappeared gradually as firearms came into use, and as an instrument of war or the chase the bow is now confined to the most savage tribes of both hemispheres. But though the bow has been long abandoned among civilized nations as a military weapon, it is still cherished as an instrument of health-



Assyrian Archer.



Egyptian Archer with arrow-heads and stone-tipped reed arrow.

ful recreation, encouraged by archery clubs or societies, which have been established in many parts of Britain. The oldest, and by far the most historically important of these societies, is the Royal Company of Archers, called also the King's Bodyguard for Scotland, formed originally, it is said, by James I., but constituted in its present form by an act of the privy-council of Scotland in 1676, and having its headquarters in Edinburgh, counting among its members many of the nobility and gentry of the northern kingdom, and holding annual meetings, where prizes are competed for. In recent years a number of clubs have been formed in the United States. Archery has the merit of forming a sport open to women as well as men.

Arches Court, the chief and most ancient consistory court, belonging to the archbishopric of Canterbury, for the debating of spiritual causes. It is named from the church in London, St. Mary le Bow, or Bow Church (so called from a fine *arched* crypt), where it was formerly held. The jurisdiction of this

court extends over the province of Canterbury. The office of president or dean is now merged in that of the judge appointed by the Public Worship Act (1877).

Archil, or **ORCHIL** (âr'kil, or'kil), a red, violet, or purple colouring matter obtained from various kinds of lichens, the most important of which are the *Rocella tinctoria* and the *R. fuciformis*, natives of the rocks of the Canary and Cape de Verd islands, Mozambique and Zanzibar, South America, &c., and popularly called dyer's-moss. The dye is used for improving the tints of other dyes, as from its want of permanencé it cannot be employed alone; but the aniline colours have largely superseded it. Cudbear and litmus are of similar origin.

Archilochus (âr-kil'o-kus) of **Paros**, one of the earliest Ionian lyric poets, the first Greek poet who composed iambic verses according to fixed rules. He flourished about 700 B.C. His iambic poems were renowned for force of style, liveliness of metaphor, and a powerful but bitter spirit of satire. In other lyric poems of a higher

character he was also considered as a model. All his works are lost but a few fragments.

Archiman'drite, in the Greek Church, an abbot or abbot-general, who has the superintendence of many abbots and convents.

Archime'dean Screw, a machine for raising water, said to have been invented by Archimedes. It is formed by winding a tube spirally round a cylinder so as to have the form of a screw, or by hollowing out the cylinder itself into a double or triple threaded screw and inclosing it in a water-tight case. When the screw is placed in an inclined position and the lower end immersed in water, by causing the screw to revolve the water may be raised to a limited extent.

Archimedes (ār-ki-mē'dēz), a celebrated ancient Greek physicist and geometrician, born at Syracuse, in Sicily, about 287 B.C. He devoted himself entirely to science, and enriched mathematics with discoveries of the highest importance, upon which the moderns have founded their admeasurements of curvilinear surfaces and solids. Archimedes is the only one among the ancients who has left us anything satisfactory on the theory of mechanics and on hydrostatics. He first taught the hydrostatic principle to which his name is attached, 'that a body immersed in a fluid loses as much in weight as the weight of an equal volume of the fluid,' and determined by means of it that an artist had fraudulently added too much alloy to a crown which King Hiero had ordered to be made of pure gold. He discovered the solution of this problem while bathing; and it is said to have caused him so much joy that he hastened home from the bath undressed, and crying out, *Eurēka! Eurēka!* 'I have found it, I have found it!' Practical mechanics also received a great deal of attention from Archimedes, who boasted that if he had a fulcrum or standpoint he could move the world. He is the inventor of the compound pulley, probably of the endless screw, the archimedean screw, &c. During the siege of Syracuse by the Romans he is said to have constructed many wonderful machines with which he repelled their attacks, and he is stated to have set on fire their fleet by burning-glasses! At the moment when the Romans gained possession of the city by assault (212 B.C.) tradition relates that Archimedes was slain while sitting in the market-place contemplating some ma-

thematical figures which he had drawn in the sand.

Archimedes, PRINCIPLE OF. See *Archimedes*.

Archimedes' Screw. See *Archimedean Screw*.

Archipel'ago, a term originally applied to the Ægæan, the sea lying between Greece and Asia Minor, then to the numerous islands situated therein, and latterly to any cluster of islands. In the Grecian Archipelago the islands nearest the European coast lie together almost in a circle, and for this reason are called the *Cyclades* (Gr. *kyklos*, a circle); those nearest the Asiatic, being farther from one another, the *Sporades* ('scattered'). (See these articles, and *Negropont*, *Scio*, *Samos*, *Rhodes*, *Cyprus*, &c.) The Malay, Indian, or Eastern Archipelago, on the east of Asia, includes Borneo, Sumatra, and other large islands. See *Malay Archipelago*.

Architec'ture, in a general sense, is the art of designing and constructing houses, bridges, and other buildings for the purposes of civil life; or, in a more limited but very common sense, that branch of the fine arts which has for its object the production of edifices not only convenient for their special purpose, but characterized by unity, beauty, and often grandeur.—The first habitations of man were such as nature afforded, or cost little labour to the occupant—caves, huts, and tents. But as soon as men rose in civilization and formed settled societies they began to build more commodious and comfortable habitations. They bestowed more care on the materials, preparing bricks of clay or earth, which they at first dried in the air, but afterwards baked by fire; and latterly they smoothed stones and joined them at first without, and subsequently with mortar or cement. After they had learned to build houses, they erected temples for their gods on a larger and more splendid scale than their own dwellings. The Egyptians are the most ancient nation known to us among whom architecture had attained the character of a fine art. Other ancient peoples among whom it had made great progress were the Babylonians, whose most celebrated buildings were temples, palaces, and hanging-gardens; the Assyrians, whose capital, Nineveh, was rich in splendid buildings; the Phœnicians, whose cities, Sidon, Tyre, &c., were adorned with equal magnificence; and the Israelites, whose temple was a wonder of architecture. But

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comparatively few architectural monuments of these latter nations have remained till our day.

This is not the case with the architecture of Egypt, however, of which we possess ample remains in the shape of pyramids, temples, sepulchres, obelisks, &c. Egyptian chronology is

far from certain, but the greatest of the architectural monuments of the country, the pyramids of Ghizeh, are at least as old as 2800 or 2700 B.C. The Egyptian temples had walls of great thickness and sloping on the

outside from bottom to top; the roofs were flat, and composed of blocks of stone reaching from one wall or column to another. The columns were numerous, close, and very stout, generally without bases, and exhibiting great variety in the designs of their capitals. The principle of the arch

though known was not employed for architectural purposes. Statues of enormous size, sphinxes carved in stone, and on the walls sculptures in outline of deities and animals, with innumerable hieroglyphics, are the decorative objects which belong to this style.

The earliest architectural remains of Greece are of unknown

antiquity, and consist of massive walls built of huge blocks of stone. In historic times the Greeks developed an architecture of noble simplicity and dignity. This style is of modern origin compared with that of Egypt, and the earliest remains give indications that it was in part derived from the Egyptian. It is considered to have attained

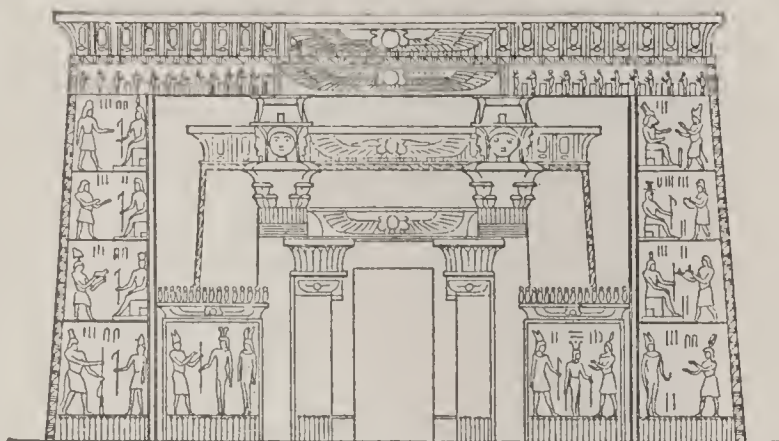
its greatest perfection in the age of Pericles, or about 460–430 B.C. The great masters of this period were Phidias, Ictinus, Calliocrates, &c. All the extant buildings are more or less in ruins. The style is characterized by beauty, harmony, and simplicity in the highest degree. Distinctive of it are

what are called the *orders* of architecture, by which term are understood certain modes of proportioning and decorating the column and its superimposed entablature. The Greeks had three orders, called respectively the *Doric*,

Ionic, and *Corinthian*. (See articles under these names.) Greek buildings were abundantly adorned with sculptures, and painting was extensively used, the details of the structures being enriched by different colours or tints. Lowness of roofs and the absence of arches were distinctive features of Greek

architecture, in which, as in that of Egypt, horizontality of line is another characteristic mark. The most remarkable public edifices of the Greeks were temples, of which the most famous is the Parthenon at Athens. Others exist in various parts of Greece as well as in Sicily, Southern Italy, Asia Minor, &c.,

where important Greek communities were early settled. Their theatres were semicircular on one side and square on the other, the semicircular part being usually excavated in the side of some convenient hill. This part, the auditorium, was filled with concentric seats, and might be capable of containing 20,000 spectators. A number



Egyptian—Front of Temple of Isis at Philæ.



Grecian Doric—Temple of Jupiter at Olympia.

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exist in Greece, Sicily, and Asia Minor, and elsewhere. No remains of private houses are known to exist. By the end of the Peloponnesian War (say 400 B.C.) the best period of Greek architecture was over; a noble simplicity had given place to excess of ornament. After the death of Alexander the Great (323) the decline was still more marked.

Among the Romans there was no original development of architecture as among the Greeks, though they early took the foremost place in the construction of such works as aqueducts and sewers, the arch being in early and extensive use among this people. As a fine art, however, Roman architecture had its origin in copies of the Greek models, all the Grecian orders being introduced into Rome, and variously modified. Their number, moreover, was augmented by the addition of two new orders—the *Tuscan* and the *Composite*.

The Romans became acquainted with the architecture of the Greeks soon after 200 B.C., but it was not till about two centuries later that the architecture of Rome attained (under Augustus) its greatest perfection. Among the great works now erected were temples, aqueducts, amphitheatres, magnificent villas, triumphal arches, monumental pillars, &c. The *amphitheatre* differed from the theatre in being a completely circular or rather elliptical building, filled on all sides with ascending seats for spectators and leaving only the central space, called the *arena*, for the combatants and public shows. The Coliseum is a stupendous structure of this kind. The *thermae*, or baths,

were vast structures in which multitudes of people could bathe at once. Magnificent tombs were often built by the wealthy. Remains of private residences are numerous, and the excavations at Pompeii in particular have thrown great light on the internal arrangements of the Roman dwelling-house. Almost all the successors of Augustus embellished Rome more or less, erected splendid palaces and temples, and adorned, like Hadrian, even the conquered countries with them. But after the period of Hadrian (117–

138 A.D.) Roman architecture is considered to have been on the decline. The refined and noble style of the Greeks was neglected, and there was an attempt to embellish the beautiful more and more. This decline was all the more rapid latterly from the disturbed state of the empire and the incursions of the barbarians.

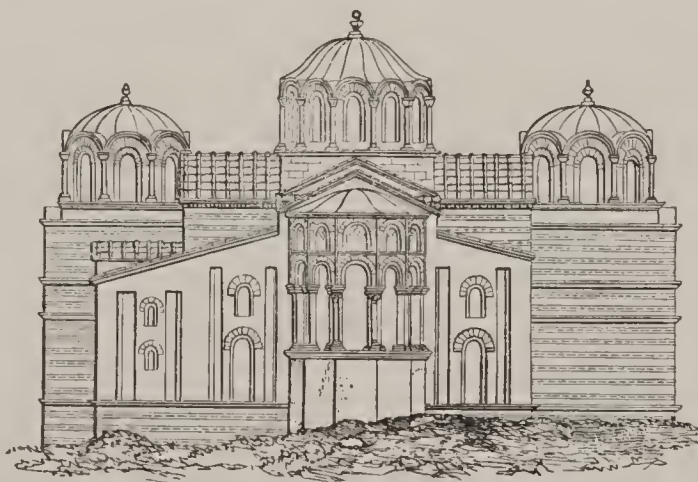
In Constantinople, after its virtual separation from the Western Empire, arose a style of art and architecture which was practised by the Greek Church during the whole of the middle ages. This is called the *Byzantine style*. The church of St. Sophia at Constantinople, built by Justinian (reigned

527–565), offers the most typical specimen of the style, of which the fundamental principle was an application of the Roman arch, the dome being the most striking feature of the building. In the most typical examples the dome or cupola rests on four pendentives.

After the dismemberment of the Roman Empire the beautiful works of ancient



Roman Corinthian—Temple of the Sun at Rome.



Byzantine—Church of Our Lady at Constantinople.

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architecture were almost entirely destroyed by the Goths, Vandals, and other barbarians in Italy, Greece, Asia, Spain, and Africa; or what was spared by them was ruined by the fanaticism of the Christians. A new style of architecture now arose, two forms of which, the Lombard and the Norman Romanesque, form important phases of art. The Lombard prevailed in North Italy and South Germany from the eighth or ninth to the thirteenth century (though the Lombard rule came to an end in 774);

the Norman Romanesque flourished, especially in Normandy and England, from the eleventh to the middle of the thirteenth century. The semicircular arch is the most characteristic feature of this style. With the Lombard Romanesque were combined Byzantine features, and buildings in the pure Byzantine style were also erected in Italy, as the Church of St. Mark at Venice.

The conquests of the Moors introduced a fresh style of architecture into Europe after the eighth century—the Moorish or Sara-



Romanesque—Cathedral of Worms.

cenic. This style accompanied the spread of Mohammedanism after its rise in Arabia in the seventh century. The edifices erected by the Moors and Saracens in Spain, Egypt, and Turkey are distinguished, among other things, by a peculiar form of the arch, which forms a curve constituting more than half of a circle or ellipse. A peculiar flowery decoration, called *arabesque*, is a common ornament of this style, of which the building called the Alhambra (see *Alhambra*) is perhaps the chief glory.

The Germans were unacquainted with architecture until the time of Charlemagne (or Charles the Great, 742–814). He introduced into Germany the Byzantine and Romanesque styles. Afterwards the Moorish or Arabian style had some influence upon that of the western nations, and thus originated the mixed style which maintained itself till the middle of the thirteenth century. Then began the modern Gothic style, which grew up in France, England, and Germany. Its striking characteristics are its pointed arches, its pinnacles and spires, its large

buttresses, clustered pillars, vaulted roofs, profusion of ornament, and, on the whole, its lofty, bold character. Its most distinctive feature, as compared with the Greek or the Egyptian style, is the predominance in it of perpendicular or rising lines, producing forms that convey the idea of soaring or mounting upwards. Its greatest capabilities have been best displayed in ecclesiastical edifices. The Gothic style is divided into four principal epochs: the Early Pointed, or general style of the thirteenth century; the Decorated, or style of the fourteenth century; the Perpendicular, practised during the fifteenth and early part of the sixteenth centuries; and the Tudor, or general style of the sixteenth century. This style lasted in England up to the seventeenth century, being gradually displaced by that branch of the Renaissance or modified revival of ancient Roman architecture which is known as the *Elizabethan style*, and which is perhaps more purely an English style than any other that can be named.

The rise of the Renaissance style in Italy is the greatest event in the history of architecture after the introduction of the Gothic style. The Gothic style had been introduced into the country and extensively employed, but had never been thoroughly naturalized. The Renaissance is a revival of the classic style based on the study of the ancient models; and having practically commenced in Florence about the beginning of the fifteenth century, it soon spread with great rapidity over Italy and the greater part of Europe. The most illustrious architects of this early period of the style were Brunelleschi, who built at Florence the dome of the cathedral, the Pitti Palace, &c., besides many edifices at Milan, Pisa, Pesaro, and Mantua; Alberti, who wrote an important work on architecture, and erected many admired churches; Bramante, who began the building of St. Peter's, Rome, and Michael Angelo, who erected its magnificent dome. On St. Peter's were also employed Raphael, Peruzzi, and San Gallo. The noblest building in this style of architecture in Britain is St. Paul's, London, the work of Sir Christopher Wren.

Since the Renaissance period there has been no architectural development requiring special note. In edifices erected at the present day some one of the various styles of architecture are employed according to taste. Modern dwelling-houses have necessarily a style of their own as far as stories and apartments and windows and chimneys can give them one. In general the Grecian style, as handed down by Rome and modified by the Italian architects of the Renaissance, from its right angles and straight entablatures, is more convenient, and fits better with the distribution of our common edifices, than the pointed and irregular Gothic. But the occasional introduction of the Gothic outline and the partial employment of its ornaments has undoubtedly an agreeable effect both in public and private edifices; and we are indebted to it, among other things, for the spire, a structure exclusively Gothic, which, though often misplaced, has become an object of general approbation and a pleasing landmark to cities and villages. The works most characteristic of the present day are the grand bridges, viaducts, &c., in many of which iron is the sole or most characteristic portion of the material.

To compare the different countries in regard to their success in the field of modern architecture would be difficult, inasmuch as

they have all produced architectural works worthy of their advances in material prosperity, education, and taste. Nor have the United States, Canada, and the Australian colonies shown themselves backward in following the lead of the older countries of Europe. In America the increase in the number of handsome buildings has been very noteworthy since the termination of the civil war.

A few words may be added on the architecture of India and China. Although many widely differing styles are to be found in India, the oldest and only true native style of Indian ecclesiastical architecture is the Buddhist, the earliest specimens dating to 250 B.C. Among the chief objects of Buddhist art are *stupas* or *topes*, built in the form of large towers, and employed as *dagobas* to contain relics of Buddha or of some noted saint. Other works of Buddhist art are temples or monasteries excavated from the solid rock, and supported by pillars of the natural rock left in their places. Buddhist architecture is found in Ceylon, Tibet, Java, &c., as well as in India. The most remarkable Hindu or Brahmanical temples are in Southern India. They are pyramidal in form, rising in a series of stories. The Saracenic or Mohammedan architecture latterly introduced into India is of course of foreign origin. The Chinese have made the *tent* the elementary feature of their architecture; and of their style any one may form an idea by inspecting the figures which are depicted upon common chinaware. Chinese roofs are concave on the upper side, as if made of canvas instead of wood. (For further information on the different subjects pertaining to architecture see separate articles on the different styles—Greek, Roman, Gothic, &c.—and such entries as *Arch*, *Column*, *Aqueduct*, *Corinthian*, *Doric*, *Ionian*, *Theatre*, &c.)

Architrave (är'ki-trāv), in architecture, the part of an entablature which rests immediately on the heads of the columns, being the lowest of its three principal divisions, the others being the *frieze* and the *cornice*.

Archives (är'kivz). See *Records*.

Archivolt (är'ki-volt), in architecture, the ornamental band of mouldings on the face of an arch and following its contour.

Archons (är'konz), the chief magistrates of ancient Athens, chosen to superintend civil and religious concerns. They were nine in number; the first was properly the

archōn, or *archōn epōnŷmos*, by whose name the year was distinguished in the public records; the second was called *archōn basilus*, or king archon, who exercised the functions of high-priest; the third, *polemarchos*, or general of the forces. The other six were called *thesmothētai*, or legislators

Archytas (ār-kī'tas), an ancient Greek mathematician, statesman, and general, who flourished about 400 B.C., and belonged to Tarentum in Southern Italy. The invention of the analytic method in mathematics is ascribed to him, as well as the solution of many geometrical and mechanical problems. He constructed various machines and automata, among the most celebrated of which was his flying pigeon. He was a Pythagorean in philosophy, and Plato and Aristotle are said to have been both deeply indebted to him. Only inconsiderable fragments of his works are extant.

Arcis-sur-Aube (ār-sē-sūr-ōb), a small town of France, dep. Aube, at which, in 1814, was fought a battle between Napoleon and the allies, after which the latter marched to Paris. Pop. 2928.

Arc-light, that species of the electric light in which the illuminating source is the current of electricity passing between two sticks of carbon kept a short distance apart, one of them being in connection with the positive, the other with the negative terminal of a battery or dynamo.



Arc-light: Carbons magnified.

Arco, a town of Tirol, near Lake Garda, a favourite winter resort of invalids. Pop. 5423.

Arcole (ār'ko-lā), a village in North Italy, 15 miles S.E. of Verona, celebrated for the battles of Nov. 15, 16, and 17, 1796, fought between the French under Bonaparte and the Austrians, in which the latter were defeated with great slaughter.

Arcos' de la Frontera, a city of Spain, 30 miles E. by N. from Cadiz, on the Guadalete, here crossed by a stone bridge, on a sandstone rock 570 feet above the level of the river. On the highest part of the rock stands the castle of the dukes of Arcos,

partly in ruins. The principal manufactures are leather, hats, and cordage. Pop. 16,280.

Ar'cot, two districts and a town of India, within the Presidency of Madras. **NORTH ARCOT** is an inland district with an area of 7256 sq. m. The country is partly flat and partly mountainous, where intersected by the Eastern Ghāts. Pop. 1,817,814.—**SOUTH ARCOT** lies on the Bay of Bengal, and has two seaports, Cuddalor and Porto Novo. Pop. 1,814,738.—The town **ARCOT** is in North Arcot, on the Palar, about 70 miles W. by S. of Madras. There is a military cantonment at 3 miles' distance. The town contains handsome mosques, a nabob's palace in ruins, and the remains of an extensive fort. Arcot played an important part in the wars which resulted in the ascendancy of the British in India. It was taken by Clive, 31st August, 1751, and heroically defended by him against an apparently overwhelming force under Rajah Sahib. Pop. 12,000.

Arctic (ār'k'tik), an epithet given to the north pole from the proximity of the constellation of the Bear, in Greek called *arktos*. The *Arctic Circle* is an imaginary circle on the globe, parallel to the equator, and 23° 28' distant from the north pole. This and its opposite, the *Antarctic*, are called the two polar circles.

Arctic Expeditions. See *North Polar Expeditions*.

Arctic Ocean, that part of the water surface of the earth which surrounds the north pole, and washes the northern shores of Europe, Asia, and America; its southern boundary roughly coinciding with the Arctic Circle (lat. 66° 32' N.). It incloses many large islands, and contains large bays and gulfs which deeply indent the northern shores of the three continents. Its great characteristic is ice, which is nearly constant everywhere.

Arctic Regions, the regions round the north pole, and extending from the pole on all sides to the Arctic Circle in lat. 66° 32' N. The Arctic or North Polar Circle just touches the northern headlands of Iceland, cuts off the southern and narrowest portion of Greenland, crosses Fox's Strait north of Hudson's Bay, whence it goes over the American continent to Behring's Strait. Thence it runs to Obdorsk at the mouth of the Obi, then crossing northern Russia, the White Sea, and the Scandinavian Peninsula, returns to Iceland. Though much skill and heroism have been developed in the explora-

tion of this portion of the earth, there is still an area round the pole estimated at 2,500,000 sq. m., which is a blank to geographers. Many have adopted the belief in the existence of an open polar sea about the north pole. But this belief is not supported by any positive evidence. Valuable minerals, fossils, &c., have been discovered within the Arctic regions. In the archipelago north of the American continent excellent coal frequently occurs. The mineral cryolite is mined in Greenland. Fossil ivory is obtained in islands at the mouth of the Lena. In Scandinavia, parts of Siberia, and north-west America, the forest region extends within the Arctic Circle. The most characteristic of the natives of the Arctic regions are the Esquimaux. The most notable animals are the white-bear, the musk-ox, the reindeer, and the whalebone whale. Fur-bearing animals are numerous. The most intense cold ever registered in those regions was 74° below zero Fahr. The aurora borealis is a brilliant phenomenon of Arctic nights. See *North Polar Expeditions*.

Arc'tium. See *Burdock*.

Arc tomys. See *Marmot*.

Arctu'rus, a fixed star of the first magnitude in the constellation of Boötes, and thought by some to be the nearest to our system of any of the fixed stars. It is one of the stars observed to have a motion of its own, and is a noticeable object in the northern heavens.

Ardahan', a small fortified town about 6400 feet above the sea, between Kars and Batúm in Russian Armenia. It was captured by the Russians in 1877, and ceded to them by the Berlin treaty, 1878.

Ar'dea, the genus to which the heron belongs, type of the family *Ardēidæ*, which includes also cranes, storks, bitterns, &c.

Ar'debil, or *ARDABIL*, a Persian town, province of Azerbaijan, near the Karasu, a tributary of the Aras, about 40 m. from the Caspian, in an elevated and healthy situation; it has mineral springs and a considerable trade. Pop. 20,000.

Ardèche (är-dāsh), a dep. in the south of France (Languedoc), on the west side of the Rhone, taking its name from the river Ardèche, which rises within it, and falls into the Rhone after a course of 46 miles; area, 2134 sq. miles. It is generally of a mountainous character, and contains the culminating point of the Cevennes. Silk and wine are produced. Annonay is the principal town, but Privas is the capital. Pop. 371,269.

Ardenne (är-dən'), an extensive tract of hilly land stretching over a large portion of the north-east of France and south-west of Belgium. Anciently the whole tract formed one immense forest (*Arduenna Silva* of Cæsar); but though extensive districts are still under wood, large portions are now occupied by cultivated fields and populous towns.

Ardenne (är-dən'), a frontier department in the north-east of France; area, 2020 sq. miles, partly consisting of the Forest of Ardenne. There are extensive slate-quarries, numerous ironworks, and important manufactures of cloth, ironware, leather, glass, earthenware, &c. Chief towns, Mézières (the capital), Rocroi, and Sedan. Pop. 1891, 324,923.

Ardnamurchan (-mur'kan) Point, the most westerly point of the island of Great Britain, in Argyllshire, having a lighthouse, 180 feet above sea-level, visible 18 to 20 miles off.

Ar'doch, a parish in south Perthshire, celebrated for its Roman remains, one a camp, being the most perfect existing in Scotland.

Ardross'an, a seaport of Scotland, in Ayrshire, on the Firth of Clyde, with a good and spacious harbour, from which coal and iron are extensively exported. Pop. 4036.

Are (är), the unit of the French land measure, equal to 100 square metres, or 1076·44 square feet. A *hectare* is 100 ares, equal to 2·47 acres.

A'rea, the superficial content of any figure or space, the quantity of surface it contains in terms of any unit.

Are'ca, a genus of lofty palms with pinnated leaves, and a drupe-like fruit inclosed in a fibrous rind. *A. Catēchu* of the Comandel and Malabar coasts is the common areca palm which yields areca or betel nuts, and also the astringent juice catechu. *A. oleracēa* is the cabbage-tree or cabbage-palm of the West Indies. With lime and the leaves of the betel-pepper, the areca-nuts when green form the celebrated masticatory of the East. They are an important article in Eastern trade.

Arecibo (ä-re-thē'bō), a seaport town on the north coast of the island of Porto Rico. Pop. 10,000.

Areiopagus. See *Areopagus*.

Are'na, the inclosed space in the central part of the Roman amphitheatres, in which took place the combats of gladiators or wild

beasts. It was usually covered with sand or saw-dust to prevent the gladiators from slipping, and to absorb the blood.

Ar'endal, a seaport of southern Norway, exporting quantities of timber and iron and owning numerous ships. Pop. 4132.

Arenic'ola. See *Lobworm*.

Are'olar Tissue, an assemblage of fibres and laminæ pervading every part of the animal structure, and connected with each other so as to form innumerable small cavities, by means of which the various organs

and parts of organs are connected together; called also *Cellular Tissue* and *Connective Tissue*.—In botany the term is sometimes applied to the *non-vascular* substance, composed entirely of untransformed cells, which forms the soft substance of plants.

Areom'eter (from Greek *araios*, thin, *metron*, a measure), an instrument for measuring the specific gravity of liquids; a *hydrometer* (which see).

Areop'agus, the oldest of the Athenian courts of justice. It obtained its name from



Arezzo—Palazzo della Fraternita and Church of Santa Maria.

its place of meeting, on the Hill of Ares (Mars), near the citadel. It existed from very remote times, and the crimes tried before it were wilful murder, poisoning, robbery, arson, dissoluteness of morals, and innovations in the state and in religion. Its meetings were held in the open air, and its members were selected from those who had held the office of archon.

Arequipa (ä-rä-képä), a city of Peru, 200 miles south of Cuzco, situated in a fertile valley, 7850 feet above sea level. Before the earthquake of 1868, which almost totally destroyed it, it was one of the best-built towns of South America. Behind the city rises the volcano of Arequipa, or Peak of Misté (20,328 feet). A considerable trade is carried on through Mollendo, which has superseded Islay as the port of Arequipa, and is connected with it by railway. Pop. 29,237.

Ares (ä'rēz). See *Mars*.

Arethu'sa, in Greek mythology, a daughter of Nereus and Doris, a nymph changed by Artēmis into a fountain in order to free

her from the pursuit of the river-god Alpheus.

Aretino (ä-rä-tē'nō), GUIDO. See *Guido*.

Aretino, PIETRO, Italian poet, born at Arezzo 1492, died at Venice 1557; the natural son of a nobleman called Luigi Bacci. He early displayed a talent for satirical poetry, and when still a young man was banished from Arezzo on account of a sonnet against indulgences. He went to Perugia, and thence to Rome (1517), where he secured the papal patronage, but subsequently lost it through writing licentious sonnets. Through the influence of the Medici family he found an opportunity to insinuate himself into the favour of Francis I. In 1527 Aretino went to Venice, where he acquired powerful friends, among them the Bishop of Vicenza. By his devotional writings he regained the favour of the Roman court. The obscenity of some of his writings was such that his name has become proverbial for licentiousness. Among them are five comedies and a tragedy.

Arezzo (ä-ret'sō, anc. *Arretium*), a city

of Central Italy, capital of a province of the same name in Tuscany, near the confluence of the Chiana with the Arno. It has a noble cathedral, containing some fine pictures and monuments; remains of an ancient amphitheatre, &c. It was one of the twelve chief Etruscan towns, and in later times fought long against the Florentines, to whom it had finally to succumb. It is the birthplace of Mæcenæ, Petrarch, Pietro Aretino, Redi, and Vasari. Pop. 11,816.—The province of Arezzo contains 1276 square miles and 238,744 inhabitants.

Ar'gal, ARGOL, or TARTAR, a hard crust formed on the sides of vessels in which wine has been kept, red or white according to the colour of the wine. It is an impure bitartrate of potassium, and is of considerable use among dyers as a mordant. When purified it forms cream of tartar.

Ar'gala. See *Adjutant-bird*.

Ar'gali, a species of wild sheep (*Caprøvis Argali* or *Ovis ammon*) found on the mountains of Siberia, Central Asia, and Kamtchatka. It is 4 feet high at the shoulders, and proportionately stout in its build, with horns nearly 4 feet in length measured along the curve, and at their base about 19 inches in circumference. It lives in small herds.

Ar'gall, SIR SAMUEL, one of the early English adventurers to Virginia, born about 1572, died 1639. He planned and executed the abduction of Pocahontas, the daughter of the Indian chief Powhattan, in order to secure the ransom of English prisoners. He was deputy-governor of Virginia (1617–1619), and was accused of many acts of rapacity and tyranny. In 1620 he served in an expedition against Algiers, and was knighted by James I.

Ar'gand Lamp, a lamp named after its inventor, Aimé Argand, a Swiss chemist and physician (born 1755, died 1803), the distinctive feature of which is a burner forming a ring or hollow cylinder covered by a chimney, so that the flame receives a current of air both on the inside and on the outside.

Argaum (âr-gá'um), a village of India, in Berar, celebrated for the victory of General Wellesley (Duke of Wellington) over the Mahrattas under Scindia and the Rajah of Berar, 29th November, 1803.

Ar'geland, FRIEDRICH WILHELM AUGUST, eminent German astronomer, born at Memel, 1799, died 1875; director successively of the observatories of Åbo and of Helsingfors; appointed professor of astronomy

at Bonn, 1837, where he superintended the erection of a new observatory, catalogued over 320,000 stars, and produced several important astronomical works.

Argemone (âr-jem'ô-nē), a small genus of ornamental American plants of the poppy order. From the seeds of *A. mexicana* is obtained an oil very useful to painters. The handsomest species is *A. grandiflora*, which has large flowers of a pure white colour.

Argensola (âr-hen-sô'lâ), LUPERCIO and BARTOLOMÉ LEONARDO DE, brothers, the "Horaces of Spain," born at Barbastro, in Aragon, the former in 1565, died in 1613; the latter born in 1566, died in 1631. Lupercio produced tragedies and lyric poems; Bartolomé a number of poems and a history of the Conquest of the Moluccas. Their writings are singularly alike in character, and are reckoned among the Spanish classics.

Argenson (âr-zhân-sôn), MARC PIERRE DE VOYER, COMTE D', celebrated French statesman, born in 1696, died 1764. After holding a number of subordinate offices he became minister for foreign affairs, and succeeded in bringing about the Congress of Breda, which was the prelude to that of Aix-la-Chapelle. He was present at the battle of Fontenoy, and was exiled to his estate for some years through the machinations of Madame Pompadour. His *Considérations sur le Gouvernement de la France*, was a very advanced study on the possibility of combining with a monarchic form of government democratic principles and local self-government. *Les Essais, ou Loisirs d'un Ministre d'État*, published in 1785, is a collection of characters and anecdotes in the style of Montaigne.

Ar'gent, in coats of arms, the heraldic term expressing silver: represented in engraving by a plain white surface.

Argentan (âr-zhân-tân), a French town, dep. of Orne (Normandy), with an old castle, and some manufactures. Pop. 6300.

Argenteuil (âr-zhân-teu-yè), a town in France, dep. Seine-et-Oise, 7 miles below Paris; has an active trade in wine, fruit, and vegetables. Pop. 11,849.

Argentie'ra, or KIMŌLI (ancient *Cimōlus*), an island in the Grecian Archipelago, one of the Cyclades, about 18 miles in circumference, rocky and sterile. Produces a detergent chalk called *Cimolian earth*, used in washing and bleaching. Pop. 1337.

Ar'gentine, a silvery-white slaty variety

ARGENTINE REPUBLIC.

of calc-spar, containing a little silica with laminae usually undulated. It is found in primitive rocks and frequently in metallic veins.—Argentine is also the name of a small British fish (*Scopelus borealis*) less than 2 inches long and of a silvery colour.

Ar'gentine Republic, formerly called the United Provinces of La Plata, a vast country of South America, the extreme length of which is 2,400 miles, and the average breadth a little over 700 miles, the total area comprising 1,125,086 sq. miles. It is bounded on the N. by Bolivia; on the E. by Paraguay, Brazil, Uruguay, and the Atlantic; on the S. by the Antarctic Ocean; and on the W. by the Andes. It comprises four great natural divisions: (1) the Andine region, containing the provinces of Mendoza, San Juan, Rioja, Catamarca, Tucuman, Salta, and Jujuy; (2) the Pampas, containing the provinces of Santiago, Santa Fé, Cordova, San Luis, and Buenos Ayres; with the territories Formosa, Pampa, and Chaco; (3) the Argentine Mesopotamia, between the rivers Paraná and Uruguay, containing the provinces of Entre Rios and Corrientes, and the territory Misiones; (4) Patagonia, including the eastern half of Tierra del Fuego. With the exception of the N.W., where lateral branches of the Andes run into the plain for 150 or 200 miles, and the province of Entre Rios, which is hilly, the characteristic feature of the country is the great monotonous and level plains called 'pampas.' In the north these plains are partly forest-covered, but all the central and southern parts present vast treeless tracts, which afford pasture to immense herds of horses, oxen, and sheep, and are varied in some places by brackish swamps, in others by salt steppes. The great water-course of the country is the Paraná, having a length of fully 2000 miles from its source in the mountains of Goyaz, Brazil, to its junction with the Uruguay, where begins the estuary of La Plata. The Paraná is formed by the union of the Upper Paraná and Paraguay rivers, near the N.E. corner of the state. Important tributaries are the Pilcomayo, the Vermejo, and the Salado. The Paraná, Paraguay, and Uruguay are valuable for internal navigation. Many of the streams which tend eastward terminate in marshes and salt lakes, some of which are rather extensive. Not connected with the La Plata system are the Colorado and the Rio Negro, the latter for-

merly the southern boundary of the state, separating it from Patagonia. The source of the Negro is Lake Nahuel Huapi, in Patagonia (area, 1200 sq. miles), in the midst of magnificent scenery. The level portions of the country are mostly of tertiary formation, and the river and coast regions consist mainly of alluvial soil of great fertility. In the pampas clay have been found the fossil remains of extinct mammalia, some of them of colossal size.

European grains and fruits, including the vine, have been successfully introduced, and are cultivated to some extent in most parts of the republic, but the great wealth of the state lies in its countless herds of cattle and horses and flocks of sheep, which are pastured on the pampas, and which multiply there very rapidly. Gold, silver, nickel, copper, tin, lead, and iron, besides marble, jasper, precious stones, and bitumen, are found in the mountainous districts of the N.W., while petroleum wells have been discovered on the Rio Vermejo; but the development of this mineral wealth has hitherto been greatly retarded by the want of proper means of transport. As a whole there are not extensive forests in the state except in the region of the Gran Chaco (which extends also into Bolivia), where, there is known to be 60,000 sq. miles of timber. Thousands of square miles are covered with thistles, which grow to a great height in their season. Cacti also forms great thickets. Peach and apple trees are abundant in some districts. The native fauna includes the puna, the jaguar, the tapir, the llama, the alpaca, the vicuña, armadillos, the rhea or nandu, a species of ostrich, &c. The climate is agreeable and healthy, 97° being about the highest temperature experienced. Rain is less frequent than in the United Kingdom.

As a whole this vast country is very thinly inhabited, some parts of it as yet being very little known. The native Indians were never very numerous, and have given little trouble to the European settlers. Tribes of them yet in the savage state still inhabit the less known districts, and live by hunting and fishing. Some of the Gran Chaco tribes are said to be very fierce, and European travellers have been killed by them. The European element is strong in the republic, more than half the population being Europeans or of pure European descent. Large numbers of immigrants arrive from Southern Europe, the Italians having

the preponderance among those of foreign birth. The typical inhabitants of the pampas are the *Gauchos*, a race of half-breed cattle-rearers and horse-breakers; they are almost continually on horseback, galloping over the plains, collecting their herds and droves, taming wild horses, or catching and slaughtering cattle. In such occupations they require a marvellous dexterity in the use of the lasso and bolas.

The river La Plata was discovered in 1512 by the Spanish navigator Juan Diaz de Solis, and the La Plata territory had been brought into the possession of Spain by the end of the sixteenth century. In 1810 the territory cast off the Spanish rule, and in 1816 the independence of the United States of the Rio de la Plata was formally declared, but it was long before a settled government was established. The present constitution dates from 1853, being subsequently modified. The executive power is vested in a president — elected by the representatives of the fourteen provinces for a term of six years. A national congress of two chambers — a senate and a house of deputies — wields the legislative authority, and the republic is making rapid advances in social and political life. The revenue for 1891 was \$70,921,650; the expenditure, \$79,008,141; the public debt, March 31, 1892, was officially stated as \$365,515,698. In 1892 there were 7676 miles of railway open. The external commerce is important, the chief exports being wool, skins, and hides, live animals, mutton, tallow, bones, corn, and flax. The imports are chiefly manufactured goods. The trade is largely with Britain and France, exports have advanced from \$45,000,000 in 1876 to \$96,703,000 in 1891. Pop. 4,200,000.

Argentite, sulphide of silver, a blackish or lead-gray mineral, a valuable ore of silver found in the crystalline rocks of many countries.

Argillaceous Rocks are rocks in which clay prevails (including shales and slates).

Argives (ăr'jīvz), or ARGIVI, the inhabitants of Argos; used by Homer and other ancient authors as a generic appellation for all the Greeks.

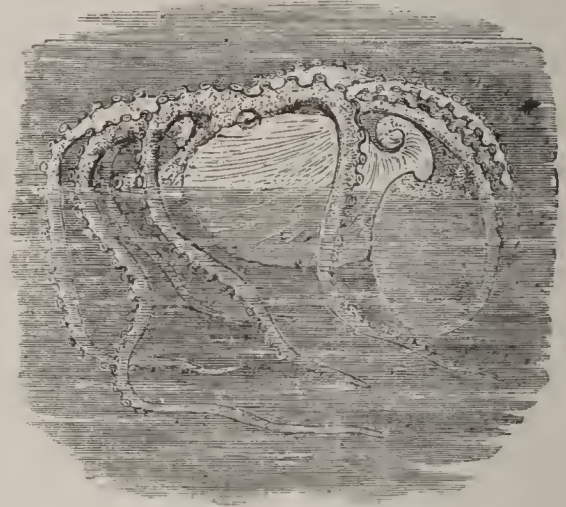
Ar'go. See *Argonauts*.

Argol. See *Argal*.

Argon, a gas, rather heavier than nitrogen, found in the air, 1894, by Prof. Ramsey and Lord Rayleigh. Its proportions are 1:100. Its marked property is its inactivity—hence the name. One way of

obtaining this element is by passing air over heated copper, which combines with the oxygen, then over heated magnesium, which combines with the nitrogen, leaving the argon. Spectrum, light red: A.

Ar'gonaut, a molluscous animal of the genus *Argonauta*, belonging to the dibranchiate or two-gilled cuttle-fishes, distinguished by the females possessing a single-chambered external shell, not organically connected with the body of the animal.



Argonaut (*Argonauta Argo*).

The males have no shell and are of much smaller size than the females. The shell is fragile, translucent, and boat-like in shape; it serves as the receptacle of the ova or eggs of the female, which sits in it with the respiratory tube or 'funnel' turned towards the carina or 'keel.' This famed mollusc swims only by ejecting water from its funnel, and it can crawl in a reversed position, carrying its shell over its back like a snail. The account of its floating on the surface of the sea, with its sail-shaped arms extended to catch the breeze, and with the six other arms as oars, is a mere fable. The argonaut, or *paper-nautilus*, must be carefully distinguished from the *pearly-nautilus* or nautilus proper (*Nautilus Pompilius*).

Argonauts, in the legendary history of Greece, those heroes who performed a hazardous voyage to Colchis, a far-distant country at the eastern extremity of the Euxine (Black Sea), with Jason in the ship *Argo*, for the purpose of securing a golden fleece, which was preserved suspended upon a tree, and under the guardianship of a sleepless dragon. By the aid of Medea, daughter of the king of Colchis, Jason was enabled to seize the fleece, and, after many strange adventures, to reach his home at Iolcos in

Thessaly. Among the Argonauts were Hercules, Castor and Pollux, Orpheus and Theseus.

Argo-Navis, the southern constellation of the Ship, containing 9 clusters, 3 nebulae, 13 double and 540 single stars, of which about 64 are visible.

Argonne, a district of France, between the rivers Meuse, Marne, and Aisne, celebrated for the campaign of Dumouriez against the Prussians in 1792, and for the military movements and actions which took place therein previous to the battle of Sedan, in 1870.

Argos, a town of Greece, in the north-east of the Peloponnesus, between the gulfs of Aegina and Nauplia or Argos. This town and the surrounding territory of Argolis were famous from the legendary period of Greek history onwards, the territory containing, besides Argos, Mycenae, where Agamemnon ruled, with a kind of sovereignty, over all the Peloponnesus. Argolis and Corinth now form a nomarchy of the Kingdom of Greece, area 1447 sq. miles, pop. 1889, 144,836

Argos'toli, a city of the Ionian Islands, capital of Cephalonia, and the residence of a Greek bishop. Pop. 8000.

Argosy, a poetical name for a large merchant vessel; derived from *Ragusa*, a port which was formerly more celebrated than now, and whose vessels did a considerable trade with England.

Argot (Fr.; *âr-gō*), the jargon, slang, or peculiar phraseology of a class or profession; originally the conventional slang of thieves and vagabonds, invented for the purpose of disguise and concealment.

Arguim, or **ARGUIN** (*âr-gwim'*, *âr-gwin'*), a small island on the west coast of Africa, not far from Cape Blanco, formerly a centre of trade the possession of which was violently disputed between the Portuguese, Dutch, English, and French.

Ar'gument, a term sometimes used as synonymous with the *subject* of a discourse, but more frequently appropriated to any kind of method employed for the purpose of confuting or at least silencing an opponent. Logicians have reduced arguments to a number of distinct heads, such as the *argumentum ad judicium*, which founds on solid proofs and addresses to the judgment; the *argumentum ad verecundiam*, which appeals to the modesty or bashfulness of an opponent by reminding him of the great names or authorities by whom the view disputed

by him is supported; the *argumentum ad ignorantiam*, the employment of some logical fallacy towards persons likely to be deceived by it; and the *argumentum ad hominem*, an argument which presses a man with consequences drawn from his own principles and concessions, or his own conduct.

Ar'gus, in Greek mythology, a fabulous being, said to have had a hundred eyes, placed by Juno to guard Io. Hence 'argus-eyed,' applied to one who is exceedingly watchful.

Argus-pheasant (*Argus gigantēus*), a large, beautiful, and very singular species of pheasant, found native in the south-east of Asia, more especially in Sumatra and some of the other islands. The males measure from 5 to 6 feet from the tip of the beak to the extremity of the tail, which has two greatly elongated central feathers. The plumage is exceedingly beautiful, the secondary quills of the wings, which are longer than the primary feathers, being each adorned with a series of ocellated or eye-like spots (whence the name—see *Argus*) of brilliant metallic hues. The general body plumage is brown.

Argyle, or **ARGYLL** (*âr-gil'*), an extensive county in the south-west of the Highlands of Scotland, consisting partly of mainland and partly of islands belonging to the Hebrides group, the chief of which are Islay, Mull, Jura, Tiree, Coll, Rum, Lismore, and Colonsay, with Iona and Staffa. On the land side the mainland is bounded north by Inverness; east by Perth and Dumbarton; elsewhere surrounded by the Firth of Clyde and its connections and the sea; area, 3255 sq. m. (or over 2,000,000 acres), of which the islands comprise about 1000 sq. m. It is greatly indented by arms of the sea, which penetrate far inland, the most important of these being Loch Sunart, Loch Linnhe (the extremities of which are Loch Eil and Loch Leven), Loch Etive, Loch Fyne, Loch Tarbert, Loch Riddon, Loch Striven, and Loch Long. The mainland is divided into the six districts of Northern Argyle, Lorn, Argyle, Cowal, Knapdale, and Kintyre; the two first being subdivided into the sub-districts of Lochiel, Ardgour, Sunart, Ardnamurchan, Morven, and Appin. The county is exceedingly mountainous, the chief summits being Bidean-nam-Bian (3766 ft.), Ben Laoigh (3708 ft.), Ben Cruachan (3611 ft.), Benmore, in Mull (3185 ft.), the Paps of Jura (2565 ft.), and Ben Arthur or the Cobbler (2891 ft.).

There are several lakes, the principal of which is Loch Awe. Cattle and sheep are reared in numbers, and fishing is largely carried on, as is also the making of whisky. There is but little arable land. The chief minerals are slate, marble, limestone, and granite. County town, Inverary; others, Campbelton, Oban, and Dunoon. Pop. 1891, 75,495.

Argyle, CAMPBELLS OF, a historic Scottish family, raised to the peerage in the person of Sir Duncan Campbell of Lochow, in 1445. The more eminent members are: (1) ARCHIBALD, 2nd Earl, killed at the battle of Flodden, 1513.—ARCHIBALD, 5th Earl, attached himself to the party of Mary of Guise, and was the means of averting a collision between the Reformers and the French troops in 1559; was commissioner of regency after Mary's abdication, but afterwards commanded her troops at the battle of Langside; died 1575.—ARCHIBALD, 8th Earl and Marquis, born 1598: a zealous partisan of the Covenanters; created a marquis by Charles I. It was by his persuasion that Charles II. visited Scotland, and was crowned at Scone in 1651. At the Restoration he was committed to the Tower, and afterwards sent to Scotland, where he was tried for high treason, and beheaded in 1661.—ARCHIBALD, 9th Earl, son of the preceding, served the king with great bravery at the battle of Dunbar, and was excluded from the general pardon by Cromwell in 1654. On the passing of the Test Act in 1681 he refused to take the required oath except with a reservation. For this he was tried and sentenced to death. He, however, escaped to Holland, from whence he returned with a view of aiding the Duke of Monmouth. His plan, however, failed, and he was taken and conveyed to Edinburgh, where he was beheaded in 1685.—ARCHIBALD, 10th Earl and 1st Duke, son of the preceding, died 1703; took an active part in the Revolution of 1688-89, which placed William and Mary on the throne, and was rewarded by several important appointments and the title of Duke.—JOHN, 2nd Duke and Duke of Greenwich, son of the above, born 1678, died 1743; served under Marlborough at the battles of Ramilies, Oudenarde, and Malplaquet, and assisted at the sieges of Lisle and Ghent. He incurred considerable odium in his own country for his efforts in promoting the union. In 1712 he had the military command in Scotland,

and in 1715 he fought an indecisive battle with the Earl of Mar's army at Sheriffmuir, near Dunblane, and forced the Pretender to quit the kingdom. He was long a supporter of Walpole, but his political career was full of intrigue. He is the Duke of Argyle in Scott's *Heart of Midlothian*.—GEORGE DOUGLAS CAMPBELL, 8th Duke, Baron Sundridge and Hamilton, was born in 1823. He early took a part in politics, especially in discussions regarding the Presbyterian Church of Scotland. In 1852 he became lord privy seal under Lord Aberdeen, and again under Lord Palmerston in 1859; postmaster-general in 1860; secretary for India from 1868 to 1874; again lord privy seal in 1880, but retired, being unable to agree with his colleagues on their Irish policy. He is author of *The Reign of Law, Scotland as it Was and as it Is*, &c. His eldest son, the MARQUIS OF LORNE, married the Princess Louise, fourth daughter of Queen Victoria, in 1871.

Argyro-Castro (ár'gi-rō-), a town of Turkey, in Albania, 40 miles north-west of Janina; built on three ridges intersected by deep ravines, across which are several bridges. Pop. about 6000.

Argyropulos, JOHANNES, one of the principal revivers of Greek learning in the fifteenth century. Born in Constantinople 1415, died at Rome 1486.

Aria, in music. See *Air*.

Ariadne (a-ri-ad'ne), in Greek mythology, a daughter of Minos, King of Crete. She gave Theseus a clue of thread to conduct him out of the labyrinth after his defeat of the Minotaur. Theseus abandoned her on the Isle of Naxos, where she was found by Bacchus, who married her.

Aria'na, the ancient name of a large district in Asia, forming a portion of the Persian empire; bounded on the north by the provinces of Bactriana, Margiana, and Hyrcania; east by the Indus; south by the Indian Ocean and the Persian Gulf; west by Media.

Ariano (ä-rē-ä'nō), a town in South Italy, province of Avellino, 44 miles north-east of Naples, the seat of a bishop, with a handsome cathedral. Pop. 14,347.

Ar'ians, the adherents of the Alexandrian bishop Arius, who, about A.D. 318, promulgated the doctrine that Christ was a created being inferior to God the Father in nature and dignity, though the first and noblest of all created beings; and also that the Holy Spirit is not God, but created by the power

of the Son. These doctrines were condemned by the Council of Nicæa in 325. Arius died in 336, and after his death his party gained considerable accessions, including several emperors, and for a time held a strong position. Since the middle of the seventh century, however, the Arians have nowhere constituted a distinct sect, although similar opinions have been advanced by various theologians in modern times.

Arica (ä-rē'kā), a seaport of Chili, 30 miles s. of Tacna; previous to 1882 it belonged to Peru. It has suffered frequently from earthquakes, being in 1868 almost entirely destroyed, part of it being also submerged by an earthquake wave. Pop. about 4000.

Arichat (-shat'), a seaport town and fishing station of Nova Scotia, on a small bay, s. coast of Madame Island. Pop. about 3000.

Ariège (ä-rē-āzh), a mountainous department of France, on the northern slopes of the Pyrenees, comprising the ancient countship of Foix and parts of Languedoc and Gascony. The principal rivers are the Ariège, Arize, and Salat, tributaries of the Garonne. Sheep and cattle are reared; the arable land is small in quantity. Chief town, Foix. Area, 1890 square miles; pop. 1891, 22,749.

A'riel, the name of several personages mentioned in the Old Testament; in the demonology of the later Jews a spirit of the waters. In Shakspeare's *Tempest*, Ariel was the 'tricksy spirit' whom Prospero had in his service.

Aries (ä'-ri-ēz; Latin), the Ram, a northern constellation of 156 stars, of which fifty are visible. It is the first of the twelve signs in the zodiac, which the sun enters at the vernal equinox, about the 21st of March. The first point in Aries is that where the equator cuts the ecliptic in the ascending node, and from which the right ascensions of heavenly bodies are reckoned on the equator, and their longitudes upon the ecliptic. Owing to the precession of the equinoxes the sign Aries no longer corresponds with the constellation Aries, which it did 2000 years ago.



Aril.

Ar'il, **Aril'lus**, in some plants, as in the nutmeg, an extra covering of the seed, outside of the true seed-coats, proceeding from the placenta, partially investing the seed, and falling off spontaneously. It is

either succulent or cartilaginous, coloured, elastic, rough, or knotted. In the nutmeg it is known as *mace*.

Arimas'pians, in ancient Greek traditions a people who lived in the extreme north-east of the ancient world. They were said to be one-eyed and to carry on a perpetual war with the gold-guarding griffins, whose gold they endeavoured to steal.

Arimathæ'a, a town of Palestine, identified with the modern *Ramleh*, 22 m. w.n.w. of Jerusalem.

Ari'on, an ancient Greek poet and musician, born at Methymna, in Lesbos, flourished about B.C. 625. He lived at the court of Periander of Corinth, and afterwards visited Sicily and Italy. Returning from Tarentum to Corinth with rich treasures, the avaricious sailors resolved to murder him. Apollo, however, having informed him in a dream of the impending danger, Arion in vain endeavoured to soften the hearts of the crew by the power of his music. He then threw himself into the sea, when one of a shoal of dolphins, which had been attracted by his music, received him on his back and bore him to land. The sailors, having returned to Corinth, were confronted by Arion, and convicted of their crime. The lyre of Arion, and the dolphin which rescued him, became constellations in the heavens. A fragment of a hymn to Poseidon, ascribed to Arion, is extant.

Arios'to, **LUDOVICO**, one of the most celebrated poets of Italy, was born at



Ludovico Ariosto.

Reggio, in Lombardy, September 8, 1474, of a noble family; died June 6, 1533. His lyric poems in the Italian and Latin lan-

guages, distinguished for ease and elegance of style, introduced him to the notice of the Cardinal Ippolito d'Este, son of Duke Ercole I. of Ferrara. In 1503 Ippolito employed him in his service, used his counsel in the most important affairs, and took him with him on a journey to Hungary. In this service he began and finished, in ten or eleven years, his immortal poem, the *Orlando Furioso*, which was published in 1515, and immediately became highly popular. He afterwards entered the service of Alfonso I., Duke of Ferrara, the cardinal's brother, a lover of the arts, who put much confidence in him. After quelling disturbances that had broken out in the wild and mountainous Garfagnana, he returned to Ferrara, where he employed himself in the composition of his comedies, and in putting the last touches to his *Orlando*. The *Orlando Furioso* is a continuation of the *Orlando Innamorata* of Bojardo, details the chivalrous adventures of the paladins of the age of Charlemagne, and extends to forty-six cantos. The best English translation is that of Rose.

Aristæus, in Greek mythology, son of Apollo and Cyrene, the introducer of bee-keeping.

Aristarchus (a-ris-tär'kus), an ancient Greek grammarian, born at Samothrace B.C. 160, died at Cyprus B.C. 88. He criticised Homer's poems with the greatest acuteness and ability, endeavouring to restore the text to its genuine state, and to clear it of all interpolations and corruptions; hence the phrase, Aristarchian criticism. His edition of Homer furnished the basis of all subsequent ones.

Aristarchus, an ancient Greek astronomer belonging to Samos, flourished between 280 and 264 B.C., and first asserted the revolution of the earth about the sun; also regarded as the inventor of the sun-dial.

Aris'teas, a personage of ancient Greek legend, represented to have lived over many centuries, disappearing and reappearing by turns.

Aristides (a-ris-tī'dēz), a statesman of ancient Greece, for his strict integrity sur-named the *Just*. He was one of the ten generals of the Athenians when they fought with the Persians at Marathon, B.C. 490. Next year he was eponymous archon, and in this office enjoyed such popularity that he excited the jealousy of Themistocles, who succeeded in procuring his banishment by the ostracism (about 483). Three years

after, when Xerxes invaded Greece with a large army, the Athenians hastened to recall him, and Themistocles now admitted him to his confidence and councils. In the battle of Plataea (479) he commanded the Athenians, and had a great share in gaining the victory. To defray the expenses of the Persian war he persuaded the Greeks to impose a tax, which should be paid into the hands of an officer appointed by the states collectively, and deposited at Delos. The confidence which was felt in his integrity appeared in their intrusting him with the office of apportioning the contribution. He died at an advanced age about B.C. 468, so poor that he was buried at the public expense.

Aristip'pus, a disciple of Socrates, and founder of a philosophical school among the Greeks, which was called the *Cyrenaic*, from his native city Cyrēnē, in Africa; flourished 380 B.C. His moral philosophy differed widely from that of Socrates, and was a science of refined voluptuousness. His fundamental principles were—that all human sensations may be reduced to two, pleasure and pain. Pleasure is a gentle, and pain a violent emotion. All living beings seek the former and avoid the latter. Happiness is nothing but a continued pleasure, composed of separate gratifications; and as it is the object of all human exertions we should abstain from no kind of pleasure. Still we should always be governed by taste and reason in our enjoyments. His doctrines were taught only by his daughter Arētē, and by his grandson Aristippus the younger, by whom they were systematized. Other Cyrenaics compounded them into a particular doctrine of pleasure, and are hence called *Hedonici*. The time of his death is unknown. His writings are lost.

Aristoc'racy (Greek *aristos*, best, *kratos*, rule), a form of government by which the wealthy and noble, or any small privileged class, rules over the rest of the citizens; now mostly applied to the nobility or chief persons in a state.

Aristogeiton (-gī'ton), a citizen of Athens, whose name is rendered famous by a conspiracy (514 B.C.) formed in conjunction with his friend Harmodius against the tyrants Hippias and Hipparchus, the sons of Pisistratus. Both Aristogeiton and Harmodius lost their lives through their attempts to free the country, and were reckoned martyrs of liberty.

Aristolochia (-lō'ki-a), a genus of plants, the type of the order Aristolochiaceæ, which

consists of dicotyledonous monochlamydeous plants, with an inferior 3-6-celled fruit, principally inhabiting the hotter parts of the world, and in many cases used medicinally on account of their tonic and stimulating properties. The genus has emmenagogic qualities, especially the European species *A. rotunda*, *A. longa*, and *A. Clematitis*. *A. bracteata* is used in India as an anthelmintic; *A. odoratissima*, a West Indian species, is a valuable bitter and alexipharmic. *A. serpentaria* is the Virginian snake-root popularly regarded as a remedy for snake bites.

Aristophanes (-tof'a-nēz), the greatest comic poet of ancient Greece, born at Athens probably about the year 444 B.C.; died not later than B.C. 380. Little is known of his life. He appeared as a poet in B.C. 427, and having indulged in some sarcasms on the powerful demagogue Cleon, was ineffectually accused by the latter of having unlawfully assumed the title of an Athenian citizen. He afterwards revenged himself on Cleon in his comedy of the Knights, in which he himself acted the part of Cleon, because no actor had the courage to do it. Of fifty-four comedies which he composed eleven only remain; believed to be the flower of the ancient comedy, and distinguished by wit, humour, and poetry, as also by grossness. In them there is constant reference to the manners, actions, and public characters of the day, the freedom of the old Greek comedy allowing an unbounded degree of personal and political satire. The names of his extant plays are Acharnians, Knights, Clouds, Wasps, Peace, Birds, Lysistrata, Thesmophoriazusæ, Frogs, Ecclesiazusæ, and Plutus.

Ar'istotle (Gr. *Aristot'cles*), a distinguished philosopher and naturalist of ancient Greece, the founder of the Peripatetic school of philosophy, was born in 384 B.C. at Stagira, in Macedonia, died at Chalcis, B.C. 322. His father, Nicomachus, was physician to Amyntas II., king of Macedonia, and claimed to be descended from Æsculapius. Aristotle had lost his parents before he came, at about the age of seventeen, to Athens to study in the school of Plato. With that philosopher he remained for twenty years, became pre-eminent among his pupils, and was known as the 'Intellect of the School.' Upon the death of Plato, 348 B.C., he took up his residence at Atarneus, in Mysia, on the invitation of his former pupil Hermeias, the ruler of that

city, on whose assassination by the Persians, 343 B.C., he fled to Mitylene with his wife Pythia, the niece of Hermeias. During his residence at Mitylene he received an invitation from Philip of Macedon to superintend the education of his son Alexander, then in his fourteenth year. This relationship between the great philosopher and the future conqueror continued for five or six years, during which the prince was instructed in grammar, rhetoric, poetry, logic, ethics, and politics, and in those branches of physics which had even then made some considerable progress. On Alexander succeeding to the throne Aristotle continued to live with him as his friend and councillor till he set out on his Asiatic campaign (334 B.C.). He returned to Athens and established his school in the Lyceum, a gymnasium attached to the temple of Apollo Lyceus, which was assigned to him by the state. He delivered his lectures in the wooded walks of the Lyceum while walking up and down with his pupils. From the action itself, or more probably from the name of the walks (*peripatoi*), his school was called Peripatetic. Pupils gathered to him from all parts of Greece, and his school became by far the most popular in Athens. The statement that he had two circles of pupils, the *exoteric* and the *esoteric* has given rise to much controversy. By some it has been held that Aristotle published during his lifetime popular discourses with a view to make way for his doctrines in Athenian society, then impregnated with Platonic theories, and that these are called exoteric in contradistinction to those in which are embodied his matured opinions. It was during the time of his teaching at Athens that Aristotle is believed to have composed the great bulk of his works. On the death of Alexander a revolution occurred in Athens hostile to the Macedonian interests with which Aristotle was identified. He therefore retired to Chalcis, where he soon after died. According to Strabo he bequeathed all his works to Theophrastus, who, with other disciples of Aristotle, amended and continued them. They afterwards passed through various hands, till, about 50 B.C., Andronicus of Rhodes put the various fragments together and classified them according to a systematic arrangement. Many of the books bearing his name are spurious, others are of doubtful genuineness. The whole are generally divided into logical, theoretical, and practical. The logi-

cal works are comprehended under the title *Organon* (instrument). The theoretical are divided into physics, mathematics, and metaphysics. The physical works (including those on natural history) are on the General Principles of Physical Science, The Heavens, Generation and Destruction, Meteorology, Natural History of Animals, On the Parts of Animals, On the Generation of Animals, On the Locomotion of Animals, On the Soul, On Memory, Sleep and Waking, Dreams, Divination. In mathematics there are two treatises, On Indivisible Lines and Mechanical Problems. The Metaphysics consist of fourteen books; the title ('*ta meta ta Physika*, 'the things following the Physics') is the invention of an editor. The practical works embrace ethics, politics, economics, and treatises on art, and comprise the *Nicomachæan Ethics* (so called because dedicated to his son *Nicomachus*), the *Politics*, *Economics*, *Poetry*, and *Rhetoric*. Among the lost works are the dialogues and others to which the term *exoteric* is applied, and which were published during Aristotle's lifetime. His style is devoid of grace and elegance. His works were first printed in a Latin translation, with the commentaries of *Averroes*, at Venice in 1489; the first Greek edition was that of *Aldus Manutius* (five vols. 1495-98). For an account of the philosophy of Aristotle see *Peripatetics*.

Aristoxenus, an ancient Greek musician and philosopher of Tarentum, born about B.C. 324. He studied music under his father *Mnesias*, and philosophy under Aristotle, whose successor he aspired to be. He endeavoured to apply his musical knowledge to philosophy, and especially to the science of mind, but it only appears to have furnished him with far-fetched analogies and led him into a kind of materialism. We have a work on the *Elements of Harmony* by him.

Arith'metic (Greek *arithmos*, number) is primarily the science of numbers. As opposed to algebra it is the practical part of the science. Although the processes of arithmetical operations are often highly complicated, they all resolve themselves into the repetition of four primary operations, addition, subtraction, multiplication, and division. Of these the two latter are only complex forms of the two former, and subtraction again is merely a reversal of the process of addition. Little or nothing is known as to the origin and invention of arithmetic. Some elementary conception of

it is in all probability coeval with the first dawn of human intelligence. In consequence of their rude methods of numeration, the science made but small advance among the ancient Egyptians, Greeks, and Romans, and it was not until the introduction of the decimal scale of notation and the Arabic, or rather Indian, numerals into Europe that any great progress can be traced. In this scale of notation every number is expressed by means of the ten digits, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, by giving each digit a local as well as its proper or natural value. The value of every digit increases in a tenfold proportion from the right towards the left; the distance of any figure from the right indicating the power of 10, and the digit itself the number of those powers intended to be expressed: thus $3464 = 3000 + 400 + 60 + 4 = 3 \times 10^3 + 4 \times 10^2 + 6 \times 10 + 4$. The earliest arithmetical signs appear to have been hieroglyphical, but the Egyptian hieroglyphics were too diffuse to be of any arithmetical value. The units were successive strokes to the number required, the ten an open circle, the hundred a curled palm-leaf, the thousand a lotus flower, ten thousand a bent finger. The letters of the alphabet afforded a convenient mode of representing figures, and were used accordingly by the Chaldeans, Hebrews, and Greeks. The first nine letters of the Hebrew alphabet represented the units, the second nine tens, the remaining four together with five repeated with additional marks, hundreds; the same succession of letters with added points was repeated for thousands, tens of thousands, and hundreds of thousands. The Greeks followed the same system up to tens of thousands. They wrote the different classes of numbers in succession as we do, and they transferred operations performed on units to numbers in higher places; but the use of different signs for the different ranks clearly shows a want of full perception of the value of place as such. They adopted the letter M as a sign for 10,000 and by combining this mark with their other numerals they could note numbers as high as 100,000,000. The Roman numerals which are still used in marking dates or numbering chapters were almost useless for purposes of computation. From one to four were represented by vertical strokes I, II, III, IIII, five by V, ten by X, fifty by L, one hundred by C, afterwards D, a thousand by M. These signs were derived from each

other according to particular rules, thus V was the half of X, Λ being also used; L was likewise the half of C. M was artistically written M and cIo, and Io, afterwards D, became five hundred. ccI represented 5000, ccIo 10,000 Io 50,000, cccIo 100,000. They were also compounded by addition and subtraction, thus IV stood for four, VI for six, XXX for thirty, XL for forty, LX for sixty. Arithmetic is divided into *abstract* and *practical*; the former comprehends notation, numeration, addition, subtraction, multiplication, division, measures and multiples, fractions, powers and roots: the latter treats of the combinations and practical applications of these and the so-called *rules*, such as reduction, compound addition, subtraction, multiplication, and division, proportion, interest, profit and loss, &c. Another division is *integral* and *fractional* arithmetic, the former treating of integers, or whole numbers, and the latter of fractions. Decimal fractions were invented in the sixteenth century, and logarithms, embodying the last great advance in the science, in the seventeenth century.

Arithmet'ical, pertaining to arithmetic or its operations.—*Arithmetical mean*, the middle term of three quantities in arithmetical progression, or half the sum of any two proposed numbers; thus 11 is the arithmetical mean to 8 and 14.—*Arithmetical progression*, a series of numbers increasing or decreasing by a common difference, as 1, 3, 5, 7, &c.—*Arithmetical signs*, certain symbols used in arithmetic, and indicating processes or facts. The common signs used in arithmetic are the following: + signifying that the numbers between which it is placed are to be added; − that the second is to be subtracted from the first; \times that the one is to be multiplied by the other; \div that the former is to be divided by the latter; = signifies that the one number is equal to the other; :: are the signs placed between the members of a proportional series, as 4 : 6 :: 8 : 12. A small figure placed on the right hand of another at the top signifies the corresponding power of the number beside which it is placed, as 5^2 , 4^3 , meaning the square of 5 and the cube of 4. $\sqrt{}$ placed before or over a number signifies the square root of that number; with a figure it signifies the root of a higher power, as $\sqrt[3]{}$, which means cube root. A period placed to the left of a series of figures indicates that they are decimal fractions.

A'rius, the originator of the *Arian* heresy. See *Arians*.

Arizo'na, a territory of the United States, bounded south by Mexico, west by California and Nevada (the river Colorado forming the greater part of the boundary), north by Utah, and east by New Mexico; area, 113,020 square miles. The surface is generally mountainous, but many fertile and well-watered valleys lie between the ridges. Part of the surface consists of deserts often



Marble Canyon, Colorado.

entirely destitute of vegetation. The territory belongs to the basin of the Colorado, which passes through a portion of it, besides forming the boundary; while the Gila and Little Colorado, tributaries of the Colorado, traverse it from east to west. The canyons of the Colorado form a wonderful feature, the river flowing for hundreds of miles in a deep rocky channel with walls rising perpendicularly to the height of 1500 to 6000 feet. In some parts timber is plentiful. The rainfall is small, and irri-

gation has been employed for agricultural purposes. Large tracts of elevated land have been found excellently adapted as pastures for sheep and cattle. The territory is rich in gold, silver, and other minerals, and mining is largely carried on, much silver and gold being now obtained. The capital is Phoenix. The territory was organized in Feb., 1863. Pop. 59,620, exclusive of Apaches and other Indians, who have frequently given much trouble to the settlers. The Southern Pacific Railway now traverses the territory.

Arjish Dagh, the loftiest peak of the peninsula of Asia Minor, at the western extremity of the Anti-Taurus Range, 13,150 feet; an exhausted volcano; on the N. and N.E. slopes are extensive glaciers.

Ark, the name applied in our translation of the Bible to the boat or floating edifice in which Noah resided during the flood or deluge; to the floating vessel of bulrushes in which the infant Moses was laid; and to the chest in which the tables of the law were preserved—the *ark of the covenant*. This was made of shittim-wood, overlaid within and without with gold, about $3\frac{3}{4}$ feet long by $2\frac{1}{4}$ feet high and broad, and over it were placed the golden covering or mercy-seat and the two cherubim. It was placed in the sanctuary of the temple of Solomon; before his time it was kept in the tabernacle, and was moved about as circumstances dictated. At the captivity it appears to have been either lost or destroyed.

Arkansas (ar'kan-sa, Indian name), one of the United States of America, bounded north by Missouri; east by the Mississippi, which separates it from the states of Mississippi and Tennessee; south by Louisiana and Texas; and west by the Indian Territory and Texas; area, 53,850 square miles. The surface in the east is low, flat, and swampy, densely wooded, and subject to frequent inundations from the numerous streams which water it. Towards the centre it becomes more diversified, presenting many undulating slopes and hills of moderate elevation. In the west it rises still higher, being traversed by a range of hills called the Ozark, which attains a height of 2000 feet, some peaks rising to 3000. In various parts the prairies are of great extent; the forests also are very magnificent, containing fine specimens, principally of oak, hickory, ash, cotton, linden, maple, locust, and pine. The principal rivers, all tributaries of the Mississippi, are the Arkansas, the Red

River, the St. Francis, and the Washita. Near the centre of the state are warm springs, much resorted to for chronic rheumatic and paralytic affections. The climate, though on the whole mild, is subject to great extremes of heat and cold, and in the lower districts is unhealthy to new settlers. The staple products are cotton and maize; fruit is tolerably abundant. Many districts are admirably adapted for grazing, and great numbers of excellent cattle are reared. Arkansas was colonized as early as 1685 by the French. As part of Louisiana it was purchased by the United States in 1803. It was erected into a separate territory in 1819, and admitted into the Union in 1836. It was one of the seceding states. The capital is Little Rock. Pop. in 1890, 1,128,179, of whom 311,227 were coloured.

Arkansas, a river of the United States, which gives its name to the above state, the largest affluent of the Mississippi after the Missouri. It rises in the Rocky Mountains, about lat. 39° N., lon. 107° W., flows in a general south-easterly direction through Colorado, Kansas, the Indian Territory, and falls into the Mississippi. Length 2170 miles.

Arkansas City, Cowley county, Kansas, the centre of a rich agricultural district, and lumber trade. Pop. 1890, 8354.

Ark'low, a town in Ireland, county Wicklow, on the right bank of the Avoca, which falls into the sea about 500 yards below the town; the scene of a severe fight during the rebellion of 1798. Fishing is the chief industry. Pop. 4777.

Ark'wright, SIR RICHARD, famous for his inventions in cotton-spinning, was born at Preston, in Lancashire, in 1732; died 1792. The youngest of thirteen children, he was bred to the trade of a barber. When about thirty-five years of age he gave himself up exclusively to the subject of inventions for spinning cotton. The thread spun by Hargreaves' jenny could not be used except as weft, being destitute of the firmness or hardness required in the longitudinal threads or warp. But Arkwright supplied this deficiency by the invention of the *spinning-frame*, which spins a vast number of threads of any degree of fineness and hardness, leaving the operator merely to feed the machine with cotton and to join the threads when they happen to break. His invention introduced the system of spinning by rollers, the carding, or *roving* as it is technically termed (that is, the soft, loose strip of cotton), passing through one pair of

rollers, and being received by a second pair, which are made to revolve with (as the case may be) three, four, or five times the velocity of the first pair. By this contrivance the



Sir Richard Arkwright.

roving is drawn out into a thread of the desired degree of tenuity and hardness. His inventions being brought into a pretty advanced state, Arkwright removed to Nottingham in 1768 in order to avoid the attacks of the same lawless rabble that had driven Hargreaves out of Lancashire. Here his operations were at first greatly fettered by a want of capital; but two gentlemen of means having entered into partnership with him, the necessary funds were obtained, and Arkwright erected his first mill, which was driven by horses, at Nottingham, and took out a patent for spinning by rollers in 1769. As the mode of working the machinery by horse-power was found too expensive he built a second factory on a much larger scale at Cromford, in Derbyshire, in 1771, the machinery of which was turned by a water-wheel. Having made several additional discoveries and improvements in the processes of carding, roving, and spinning, he took out a fresh patent for the whole in 1775, and thus completed a series of the most ingenious and complicated machinery. Notwithstanding a series of law-suits in defence of his patent rights, and the destruction of his property by mobs, he amassed a large fortune. He was knighted by George III. in 1786.

Arlberg (ärl'berh), a branch of the Rhætian Alps, in the west of Tirol, between it and Vorarlberg, pierced by the third longest railway tunnel in the world. It is $6\frac{1}{2}$ miles long, and

was finished in November, 1883, and connects the valley of the Inn with that of the Rhine, and the Austrian railway system with the Swiss railways.

Arles (ärl; anc. *Arelâte*), a town of southern France, dep. Bouches du Rhône, 17 miles south-east of Nismes. It was an important town at the time of Cæsar's invasion, and under the later emperors it became one of the most flourishing towns on the further side of the Alps. It still possesses numerous ancient remains, of which the most conspicuous are those of a Roman amphitheatre, which accommodated 24,000 spectators. It has a considerable trade, manufactures of silk, &c., and furnishes a market for the surrounding country. Pop. 13,291.

Ar'lington, HENRY BENNET, EARL OF, member of the Cabal ministry, and one of the scheming creatures of Charles II., born 1618, died 1685. He is supposed to have lived and died a Roman Catholic.

Arlington, Mass., 6 miles from Boston, seat of Mount Hope Hospital for the Insane. It has several small factories and a savings bank. Pop. 1890, 5625.

Arm, the upper limb in man, connected with the thorax or chest by means of the scapula or shoulder-blade, and the clavicle or collar-bone. It consists of three bones, the arm-bone (*humerus*), and the two bones of the forearm (*radius* and *ulna*), and it is connected with the bones of the hand by the carpus or wrist. The head or upper end



Bones of the Arm.

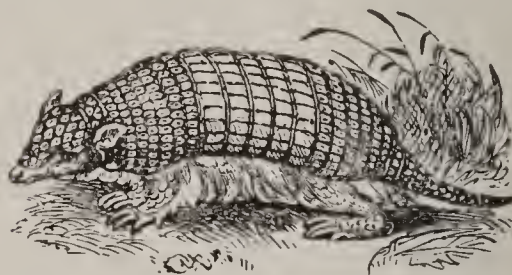
of the arm-bone fits into the hollow called the *glenoid cavity* of the scapula, so as to form a joint of the ball-and-socket kind, allowing great freedom of movement to the limb. The lower end of the humerus is broadened out by a projection on both

the outer and inner sides (the outer and inner *condyles*), and has a pulley-like surface for articulating with the fore-arm to form the elbow-joint. This joint somewhat resembles a hinge, allowing of movement only in one direction. The ulna is the inner of the two bones of the fore-arm. It is largest at the upper end, where it has two processes, the *coronoid* and the *olecranon*, with a deep groove between to receive the humerus. The radius—the outer of the two bones—is small at the upper and expanded at the lower end, where it forms part of the wrist-joint. The muscles of the upper arm are either *flexors* or *extensors*, the former serving to bend the arm, the latter to straighten it by means of the elbow-joint. The main flexor is the *biceps*, the large muscle which may be seen standing out in front of the arm when a weight is raised. The chief opposing muscle of the biceps is the *triceps*. The muscles of the fore-arm are, besides flexors and extensors, *pronators* and *supinators*, the former turning the hand palm downwards, the latter turning it upwards. The same fundamental plan of structure exists in the limbs of all vertebrate animals.

Arma'da, the Spanish name for any large naval force; usually applied to the Spanish fleet vaingloriously designated the *Invincible Armada*, intended to act against England A.D. 1588. It was under the command of the Duke of Medina-Sidonia, and consisted of 130 great war vessels, larger and stronger than any belonging to the English fleet, with 30 smaller ships of war, and carried 19,295 marines, 8460 sailors, 2088 slaves, and 2630 cannons. It had scarcely quitted Lisbon on May 29, 1588, when it was scattered by a storm, and had to be refitted in Corunna. It was to co-operate with a land force collected in Flanders under the Prince of Parma, and to unite with this it proceeded through the English Channel towards Calais. In its progress it was attacked by the English fleet under Lord Howard, who, with his lieutenants, Drake, Hawkins, and Frobisher, endeavoured by dexterous seamanship and the discharge of well-directed volleys of shot to destroy or capture the vessels of the enemy. The great lumbering Spanish vessels suffered severely from their smaller opponents, which most of their shot missed. Arrived at length off Dunkirk, the armada was becalmed, thrown into confusion by fire ships, and many of the Span-

ish vessels destroyed or taken. The Duke of Medina-Sidonia, owing to the severe losses, at last resolved to abandon the enterprise, and conceived the idea of reconveying his fleet to Spain by a voyage round the north of Great Britain; but storm after storm assailed his ships, scattering them in all directions, and sinking many. Some went down on the cliffs of Norway, others in the open sea, others on the Scottish coast. About thirty vessels reached the Atlantic Ocean, and of these several were driven on the coast of Ireland and wrecked. In all, seventy-two large vessels and over 10,000 men were lost.

Armadi'llo (genus *Dasypus*), an edentate mammal peculiar to South America, consisting of various species, belonging to a family intermediate between the sloths and ant-eaters. They are covered with a hard bony shell, divided into belts, composed of small separate plates like a coat of mail,



Yellow-footed Armadillo (*Dasypus Encoubert*).

flexible everywhere except on the forehead, shoulders, and haunches, where it is not movable. The belts are connected by a membrane, which enables the animal to roll itself up like a hedgehog. These animals burrow in the earth, where they lie during the daytime, seldom going abroad except at night. They are of different sizes; the largest, *Dasypus gigas*, being 3 feet in length without the tail, and the smallest only 10 inches. They subsist chiefly on fruits and roots, sometimes on insects and flesh. They are inoffensive, and their flesh is esteemed good food.—There is a genus of isopodous Crustacea called *Armadillo*, consisting of animals allied to the wood-lice, capable of rolling themselves into a ball.

Armageddon (-ged'don), the great battlefield of the Old Testament, where the chief conflicts took place between the Israelites and their enemies—the table-land of Esdraelon in Galilee and Samaria, in the centre of which stood the town Megiddo, on the site of the modern Lejjun: used

figuratively in the Apocalypse to signify the place of 'the battle of the great day of God.'

Armagh (är-mä'), a county of Ireland, in the province of Ulster; surrounded by Monaghan, Tyrone, Lough Neagh, Down, and Lowth; area, 328,086 acres, of which about a half is under tillage. The north-west of the county is undulating and fertile. The northern part, bordering on Lough Neagh, consists principally of extensive bogs. On the southern border is a range of barren hills. The chief rivers are the Blackwater, which separates it from Tyrone; the Upper Bann, which discharges itself into Lough Neagh; and the Callan, which falls into the Blackwater. There are several small lakes. The manufacture of linen is carried on very extensively. Armagh, Lurgan, and Portadown are the chief towns. The county sends three members to parliament. Pop. 143,056.—The county town, ARMAGH, formerly a parliamentary borough, is situated partly on a hill, about half a mile from the Callan. It has a Protestant cathedral crowning the hill, a Gothic building dating from the eighth century, repaired and beautified recently; a new Roman Catholic cathedral in the pointed Gothic style, and various public buildings. It is the see of an archbishop of the Protestant Episcopal Church, who is primate of all Ireland, and is a place of great antiquity. Pop. 1891, 8303.

Armagnac (är-mä-nyäk), an ancient territory of France, in the province of Gascony, some of the counts of which hold prominent places in the history of France. Bernard VII., son of John II., surnamed the Hunchback, succeeded his brother, John III., in 1391, and was called to court by Isabella of Bavaria, with the view of heading the Orleans in opposition to the Burgundian faction, where he no sooner gained the ascendancy than he compelled the queen to appoint him Constable of France. He showed himself a merciless tyrant, and became so generally execrated that the Duke of Burgundy, to whom Isabella had turned for help, found little difficulty in gaining admission into Paris, and even seizing the person of Armagnac, who was cast into prison in 1418, when the exasperated populace burst in and killed him and his followers. John V., grandson of the above, who succeeded in 1450, made himself notorious for his crimes. He was assassinated in his castle of Lectoure in 1473 by an agent

of Louis XI., against whom he was holding out.

Ar'mature, a term applied to the piece of soft iron which is placed across the poles of permanent or electro-magnets for the purpose of receiving and concentrating the attractive force. In the case of permanent magnets it is also important for preserving their magnetism when not in use, and hence it is sometimes termed the *keeper*. It produces this effect in virtue of the well-known law of induction, by which the armature, when placed near or across the poles of the magnet, is itself converted into a temporary magnet with reversed poles, and these, reacting upon the permanent magnet, keep its particles in a state of constant magnetic tension, or, in other words, in that constrained position which is supposed to constitute magnetism. A horse-shoe magnet should therefore never be laid aside without its armature; and in the case of straight bar-magnets two should be placed parallel to each other, with their poles reversed, and a keeper or armature across them at both ends. The term is also applied to the core and coil of the electro-magnet, which revolves before the poles of the permanent magnet in the magneto-electric machine.

Armed Neutrality, the condition of affairs when a nation assumes a threatening position, and maintains an armed force to repel any aggression on the part of belligerent nations between which it is neutral. The term is applied in history to a coalition entered into by the northern powers in 1780 and again in 1800.

Armed Ship, a ship which is taken into the service of a government for a particular occasion, and armed like a ship of war.

Arme'nia, a mountainous country of Western Asia, not now politically existing, but of great historical interest, as the original seat of one of the oldest civilized peoples in the world. It is now shared between Turkey, Persia, and Russia. It has an area of about 137,000 square miles, and is intersected by the Euphrates, which divides it into the ancient divisions, Armenia Major and Armenia Minor. The country is an elevated plateau, inclosed on several sides by the ranges of Taurus and Anti-Taurus, and partly occupied by other mountains, the loftiest of which is Ararat. Several important rivers take their rise in Armenia, namely, the Kur or Cyrus, and its tributary the Aras or Araxes, flowing east to the Caspian Sea; the Halys or

Kizil-Irmak, flowing north to the Black Sea; and the Tigris and Euphrates, which flow into the Persian Gulf. The chief lakes are Van and Urumiyah. The climate is rather severe. The soil is on the whole productive, though in many places it would be quite barren were it not for the great care taken to irrigate it. Wheat, barley, tobacco, hemp, grapes, and cotton are raised; and in some of the valleys apricots, peaches, mulberries, and walnuts are grown. The inhabitants are chiefly of the genuine Armenian stock, a branch of the Aryan or Indo-European race; but besides them, in consequence of the repeated subjugation of the country, various other races have obtained a footing. The total number of Armenians is estimated at 2,000,000, of whom probably one-half are in Armenia. The remainder, like the Jews, are scattered over various countries, and being strongly addicted to commerce, play an important part as merchants. They retain, however, in their different colonies their distinct nationality.

Little is known of the early history of Armenia, but it was a separate state as early as the eighth century B.C., when it became subject to Assyria, as it also did subsequently to the Medes and the Persians. It was conquered by Alexander the Great in 325 B.C., but regained its independence about 190 B.C. Its king Tigranes, son-in-law of the celebrated Mithridates, was defeated by the Romans under Lucullus and Pompey about 69–66 B.C., but was left on the throne. Since then its fortunes have been various under the Romans, Parthians, Byzantine emperors, Persians, Saracens, Turks, &c. A considerable portion of it has been acquired by Russia in the present century, part of this in 1878.

The Armenians received Christianity as early as the second century. During the Monophysitic disputes they held with those who rejected the twofold nature of Christ, and being dissatisfied with the decisions of the Council of Chalcedon (451) they separated from the Greek Church in 536. The popes have at different times attempted to gain them over to the Roman Catholic faith, but have not been able to unite them permanently and generally with the Roman Church. There are, however, small numbers here and there of United Armenians, who acknowledge the spiritual supremacy of the pope, agree in their doctrines with the Catholics, but retain their peculiar cere-

monies and discipline. But the far greater part are yet Monophysites, and have remained faithful to their old religion and worship. Their doctrine differs from the orthodox chiefly in their admitting only one nature in Christ, and believing the Holy Spirit to proceed from the Father alone. Their sacraments are seven in number. They adore saints and their images, but do not believe in purgatory. Their hierarchy differs little from that of the Greeks. The *Catholicus*, or head of the church, has his seat at Etchmiadzin, a monastery near Erivan, the capital of Russian Armenia, on Mount Ararat.

The Armenian language belongs to the Indo-European family of languages, and is most closely connected with the Iranic group. The Old Armenian language differs from the modern, which contains a large intermixture of Persian and Turkish elements. The Armenian Bible, translated from the Septuagint by Isaac or Sahak, the patriarch, early in the fifth century, is a model of the classic style.

In 1896 efforts were made towards ameliorating the condition of the Armenians, which, under the oppression of their Turkish rulers, both political and religious, had become unendurable. Massacres having occurred in many places, by which thousands of the Armenians were put to death with terrible cruelty, the civilized nations combined for the purpose of enforcing reforms in the Turkish government.

Armentières (är-män-tyär), a town in France, dep. Nord, 10 miles w.n.w. of Lille, on the Lys. The town has extensive manufactures of linen and cotton goods and an extensive trade. Pop. 26,614.

Arm'felt, GUSTAV MORITZ, COUNT OF, Swedish soldier; born 1757, died 1814. Though he had been highly favoured and loaded with honours by Gustavus III., he incurred the enmity of the Duke of Sudermania, guardian to the young king, Gustavus IV., and was deprived of all his titles and possessions. He was restored to his fortune and honours in 1799, when Gustavus IV. attained his majority, and held several high military posts. Ultimately, however, he entered the Russian service, was made count, chancellor of the University of Åbo, president of the department for the affairs of Finland, member of the Russian senate, and served in the campaign against Napoleon in 1812.

Armida (är-mē'dà), a beautiful enchan-

tress in Tasso's *Jerusalem Delivered*, who succeeds in bringing the hero Rinaldo, with whom she had fallen violently in love, to her enchanted gardens. Here he completely forgets the high task to which he had devoted himself, until messengers from the Christian host having arrived at the island, Rinaldo escapes with them by means of a powerful talisman. In the sequel *Arnida* becomes a Christian.

Ar'millary Sphere (L. *armilla*, a hoop), an astronomical instrument consisting of an arrangement of rings, all circles of one sphere, intended to represent the principal circles of the celestial globe, the rings standing for the meridian of the station, the ecliptic, the tropics, the arctic and antarctic circles, &c., in their relative positions. Its main use is to give a representation of the apparent motions of the solar system.

Armin'ians, a sect or party of Christians, so called from James *Arminius* or *Harmensen*, a Protestant divine of Leyden, who died in 1609. They were called also *Remonstrants*, from their having presented a *remonstrance* to the States-general in 1610. The Arminian doctrines are: (1) Conditional election and reprobation, in opposition to absolute predestination. (2) Universal redemption, or that the atonement was made by Christ for all mankind, though none but believers can be partakers of the benefit. (3) That man, in order to exercise true faith, must be regenerated and renewed by the operation of the Holy Spirit, which is the gift of God; but that this grace is not irresistible and may be lost, so that men may relapse from a state of grace and die in their sins. These doctrines were vehemently attacked by the Calvinists of Holland, and were condemned by the Synod of Dort in 1619. The Arminians in consequence were treated with great severity; many of them fled to, and spread in, other countries, and though there is no longer any particular sect to which the name is exclusively applied, many bodies are classed as Arminians, as being opposed to the Calvinists on the question of predestination.

Armin'ius, an ancient German hero celebrated by his fellow-countrymen as their deliverer from the Roman yoke; born about 18-16 B.C., assassinated A.D. 19. Having been sent as a hostage to Rome, he served in the Roman army, and was raised to the rank of *eques*. Returning home he found the Roman governor, Quintilius Varus, making efforts to Romanize the German

tribes near the Rhine. Placing himself at the head of the discontented tribes he completely annihilated the army of Varus, consisting of three legions, in a three days' battle fought in the Teutoburg forest. For some time he baffled the Roman general Germanicus, and after many years' resistance to the vast power of the empire he drew upon himself the hatred of his countrymen by aiming at the regal authority, and was assassinated. A national monument to his memory was inaugurated on the Grotenburg, near Detmold, in 1875.

Arminius, JACOBUS (properly JAKOB HARMENSEN), founder of the sect of Arminians or Remonstrants, was born in South Holland in 1560, died 1609. He studied at Utrecht, in the University of Leyden, and at Geneva, where his chief preceptor in theology was Theodore Beza (1582). On his return to Holland he was appointed minister of one of the churches in Amsterdam, and chosen to undertake the refutation of a work which strongly controverted Beza's doctrine of predestination; but he happened to be convinced by the work which he had undertaken to refute. Elected in 1603 professor of divinity at Leyden, he openly declared his opinions, and was involved in harassing controversies, especially with his fellow professor Gomarus. These contests, with the continual attacks on his reputation, at length impaired his health and brought on a complicated disease, of which he died. See *Arminians*.

Armistice, a temporary suspension of hostilities between two belligerent powers or two armies by mutual agreement, often concluded for only a few hours to bury the slain, remove the wounded, and exchange prisoners, as also sometimes to allow of a parley between the opposing generals. A general armistice is usually the preliminary of a peace.

Armor'ica (from two Celtic words signifying 'upon the sea'), a name anciently applied to all north-western Gaul, latterly limited to what is now Brittany. Hence *Armoric* is one name for Breton or the language of the inhabitants of Brittany, a Celtic dialect closely allied to Welsh.

Armour. See *Arms*.

Armourer, a maker of armour or arms, or one who keeps them in repair. In the British army an armourer is attached to each troop of cavalry, and to each company of infantry.

Armour-plates, iron or steel plates with

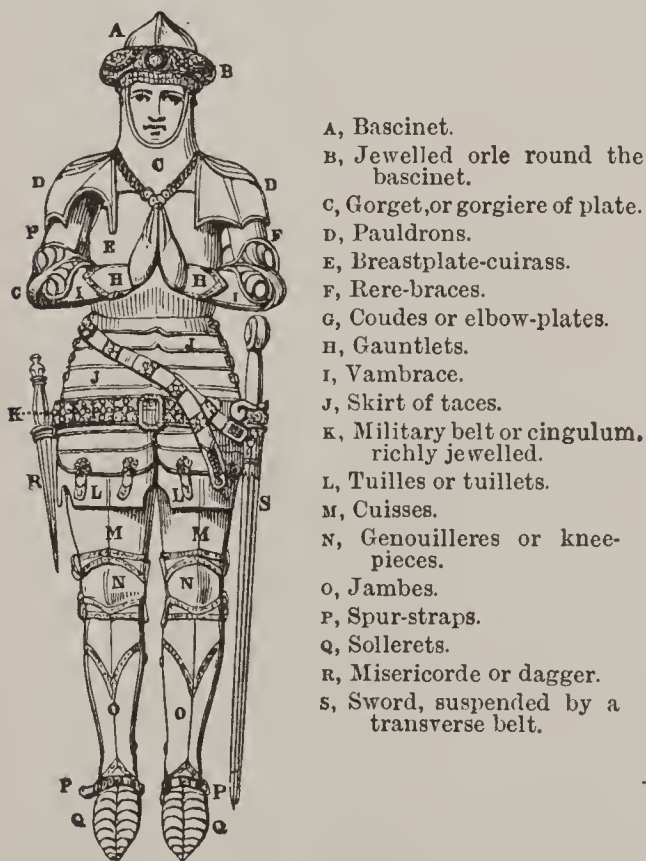
which the sides of vessels of war are covered with the view of rendering them shot-proof. See *Iron-clad Vessels*.

Arms, COAT OF, or ARMORIAL BEARINGS, a collective name for the devices borne on shields, on banners, &c., as marks of dignity and distinction, and, in the case of family and feudal arms, descending from father to son. They were first employed by the Crusaders, and became hereditary in families at the close of the twelfth century. They took their rise from the knights painting their banners or shields each with a figure or figures proper to himself, to enable him to be distinguished in battle when clad in armour. See *Heraldry*.

Arms, COLLEGE OF. See *Herald*.

Arms, STAND OF, the set of arms necessary for the equipment of a single soldier.

Arms and Armour. The former term is applied to weapons of offence, the latter to the various articles of defensive covering



Armour, from the effigy of Sir Richard Peyton, in Tong Church, Shropshire.

used in war and military exercises, especially before the introduction of gunpowder. Weapons of offence are divisible into two distinct sections—firearms, and arms used without gunpowder or other explosive substance. The first arms of offence would probably be wooden clubs, then would follow wooden weapons made more deadly by means

of stone or bone, stone axes, slings, bows and arrows with heads of flint or bone, and afterwards various weapons of bronze. Subsequently a variety of arms of iron and steel were introduced, which comprised the sword, javelin, pike, spear or lance, dagger, axe, mace, chariot scythe, &c.; with a rude artillery consisting of catapults, ballistæ, and battering-rams. From the descriptions of Homer we know that almost all the Grecian armour, defensive and offensive, in his time was of bronze; though iron was sometimes used. The lance, spear, and javelin were the principal weapons of this age among the Greeks. The bow is not often mentioned. Among ancient nations the Egyptians seem to have been most accustomed to the use of the bow, which was the principal weapon of the Egyptian infantry. Peculiar to the Egyptians was a defensive weapon intended to catch and break the sword of the enemy. With the Assyrians the bow was a favourite weapon; but with them lances, spears, and javelins were in more common use than with the Egyptians. Most of the large engines of war, chariots with scythes projecting at each side from the axle, catapults, and ballistæ, seem to have been of Assyrian origin. During the historical age of Greece the characteristic weapon was a heavy spear from 21 to 24 feet in length. The sword used by the Greeks was short, and was worn on the right side. The Roman sword was from 22 to 24 inches in length, straight, two-edged, and obtusely pointed, and as by the Greeks was worn on the right side. It was used principally as a stabbing weapon. It was originally of bronze. The most characteristic weapon of the Roman legionary soldier, however, was the *pilum*, which was a kind of pike or javelin, some 6 feet or more in length. The *pilum* was sometimes used at close-quarters, but more commonly it was thrown. The favourite weapons of the ancient Germanic races were the battle-axe, the lance or dart, and the sword. The weapons of the Anglo-Saxons were spears, axes, swords, knives, and maces or clubs. The Normans had similar weapons, and were well furnished with archers and cavalry. The cross-bow was a comparatively late invention introduced by the Normans. Gunpowder was not used in Europe to discharge projectiles till the beginning of the fourteenth century. Cannon are first mentioned in England in 1338, and there seems to be no doubt that they were used by the

ARMS AND ARMOUR.

English at the siege of Cambrai in 1339. The projectiles first used for cannon were of stone. Hand firearms date from the fifteenth century. At first they required two men to serve them, and it was necessary to rest the muzzle on a stand in aiming and firing.

The first improvement was the invention of the match-lock, about 1476; this was followed by the wheel-lock, and about the middle of the seventeenth century by the flint-lock, which was in universal use until it was superseded by the percussion-lock, the invention



Roman Cuirass



Greek Armour.



Roman Cuirass—Scale armour.

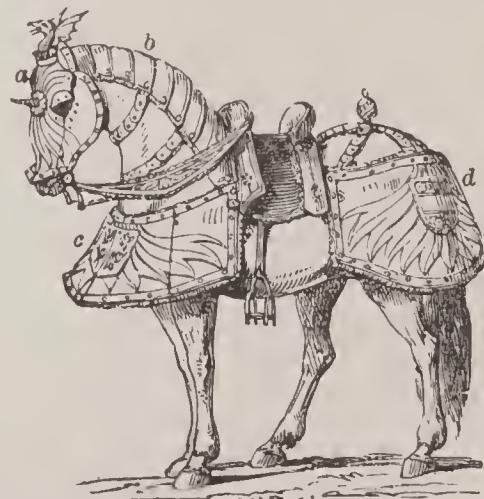


Chain Armour.

of a Scotch clergyman early in the nineteenth century. The needle-gun dates from 1827. The only important weapon not a firearm that has been invented since the introduction of gunpowder is the bayonet, which is believed to have been invented about 1650. See *Cannon, Musket, Rifle, &c.*

Some kind of defensive covering was probably of almost as early invention as weapons of offence. The principal pieces of defensive armour used by the ancients were shields, helmets, cuirasses, and greaves. In the earliest ages of Greece the shield is described as of immense size, but in the time of the Peloponnesian war (about B.C. 420) it was much smaller. The Romans had two sorts of shields; the *scutum*, a large oblong rectangular highly convex shield, carried by the legionaries; and the *parma*, a small round or oval flat shield, carried by the light-armed troops and the cavalry. In the declining days of Rome the shields became larger and more varied in form. The helmet was a characteristic piece of armour among the Assyrians, Greeks, Etruscans, and Romans. Like all other body armour it was usually made of bronze. The helmet of the historical age of Greece was distinguished by its lofty crest. The Roman helmet in the time of the early emperors fitted close to the head, and had a neck-guard and hinged cheek-pieces fastened under the chin, and a small bar across the face for a visor. Both Greeks and Romans

wore cuirasses, at one time of bronze, but latterly of flexible materials. Greaves for the legs were worn by both, but among the Romans usually on one leg. The ancient Germans had large shields of plaited osier covered with leather, afterwards their shields were small, bound with iron, and studded with bosses. The Anglo-Saxons had round



Horse-armour of Maximilian I. of Germany.

a, Chamfron. b, Manefaire. c, Poitrinal, poitrel, or breastplate. d, Croupiere or buttock-piece.

or oval shields of wood, covered with leather, and having a boss in the centre; and they had also corselets, or coats of mail, strengthened with iron rings. The Normans were well protected by mail; their shields were somewhat triangular in shape, their helmets conical. In Europe generally metal armour

was used from the tenth to the eighteenth century, and at first consisted of a tunic made of iron rings firmly sewn flat upon strong cloth or leather. The rings were afterwards interlinked one with another so as to form a garment of themselves, called *chain-mail*. Great variety is found in the pattern of the armour, and in some cases small pieces of metal were used instead of rings, forming what is called *scale-armour*. A suit of armour consisting of larger pieces of metal, called *plate-armour*, was now introduced, and the whole body came to be incased in a heavy metal covering. The various forms of ring or scale armour were gradually superseded by the plate-armour, which continued to be worn until long after the introduction of firearms and field-artillery. A complete suit of armour was an elaborate and costly equipment, consisting of a number of different pieces, each with its distinctive name. In modern European armies the metal cuirass is still to some extent in use, the *cuirassiers* being heavy cavalry; and it is said that this piece of armour proves a useful defence against rifle bullets. During all the time that the use of heavy armour prevailed, the horsemen, who alone were fully armed, formed the principal strength of armies; and infantry were generally regarded as of hardly any account. England was, however, an exception, as the English archers were almost at all times, before the invention of gunpowder, an important and sometimes the chief force in the army. The bow (*long-bow*) of the English archers was from 5 to 6 feet in length, and the arrow discharged from it was itself a yard long. The long-bow continued in general use in England till the end of the reign of Elizabeth, and even as late as 1627 there was a body of English archers in the pay of Richelieu at the siege of La Rochelle.

Armstrong, JOHN, Scottish poet and physician, born about 1709, died 1779. After studying medicine in Edinburgh he settled



Allecret (Light Plate)
Armour, A.D. 1540.

in London. In 1744 he published his chief work, the *Art of Preserving Health*, a didactic poem. This work raised his reputation to a height which his subsequent efforts scarcely sustained. In 1746 he became physician to an hospital for soldiers, and in 1760 he was appointed physician to the forces which went to Germany. After his return to London he published a collection of his *Miscellanies*, which contained, however, nothing valuable. He afterwards visited France and Italy, and published an account of his tour under the name of *Lancelot Temple*. His last production was a volume of *Medical Essays*.

Armstrong, WILLIAM GEORGE, LORD, engineer and mechanical inventor, born at Newcastle-on-Tyne, 10th Nov. 1810. He was trained as a solicitor, and practised as such for some time, though his tastes scarcely lay in that direction. Among his early inventions were the hydro-electric machine, a powerful apparatus for producing frictional electricity, and the hydraulic crane. In 1846 the Elswick works, near Newcastle, were established for the manufacture of his cranes and other heavy iron machinery, and these works are now among the most extensive of their kind. Here the first rifled ordnance gun which bears his name was made in 1854. (See next art.) His improvements in the manufacture of guns and shells led to his being appointed engineer of rifled ordnance under government, and he was knighted in 1858. This appointment came to an end in 1863, since which time his ordnance has taken a prominent place in the armaments of different countries. He was raised to the peerage as *Baron Armstrong* in 1887.

Armstrong Gun, a kind of cannon, so-called from its inventor (see the preceding article), made of wrought-iron, principally of spirally-coiled bars, so disposed as to bring the metal into the most favourable position for the strain to which it is to be exposed, and occasionally having an inner tube or core of steel, rifled with numerous shallow grooves. The size of these guns ranges from the smallest field-piece to pieces of the highest calibre. The projectile is coated with lead, and inserted into a chamber behind the bore. This the explosion drives forward, compressing its soft coating into the grooves, so as to give it a rotary motion, and at the same time obviate windage. Both breech-loading and muzzle-loading Armstrong guns are made.

ARMY.

Army, a collection or body of men armed for war, and organized in companies, battalions, regiments, brigades, or similar divisions, under proper officers. Ancient armies from the time of Rhamses II. (Sesostris) of Egypt downwards, underwent a series of progressive improvements under the Assyrians, Persians, Greeks, and Carthaginians, till they reached a high degree of perfection under the Romans. In Rome every citizen from the age of seventeen to forty-six was bound to serve in the army. Under the republic a levy took place every year soon after the election of the Consuls. It was superintended by the military tribunes, who at once formed the new levies into legions. (See *Legion*.) Under the empire a standing army was required for maintenance of order in the interior and the defence of the frontiers. In the reign of Augustus the strength of this army reached 450,000 men. The earliest military system of the Teutonic races consisted of the armed free-men, ruled by elected leaders, but even then there was a personal following or bodyguard of the king or leader. Among the countries of modern Europe the foundation of a standing army was first laid in France. Charles VII. of France issued an ordinance for the creation of a number of troops of horse, and a corresponding body of infantry, the whole force amounting to 25,000 men. The superiority of such a body over an assemblage of feudal troops was soon proved, and other states imitated the example of France. By the beginning of the sixteenth century France, Germany, and Spain were all in possession of considerable standing armies. Since the middle of the eighteenth century a great change has taken place in the composition of armies through the reintroduction of the principle of the universal liability of all men capable of bearing arms to military service, or, in other words, through the raising of armies by a general conscription, which is now done in every European country except Britain.

Before the Norman conquest the armed force of England consisted essentially of a national militia (called *fyrð*), in which every landholder was bound to serve when called upon; but the king and some of the great earls maintained bodies of troops out of their private means. Under William the Conqueror and his immediate successors the whole kingdom was divided into upwards of 60,000 *knights' fees*, every tenant of a fee being bound to attend his lord

with horse and arms (or provide a substitute) at his own cost for forty days in each year. When one man held many fees he was bound to furnish the king with one fully equipped horseman for every knight's fee. In course of time it became customary for the king, when the holder of a fee was unable or unwilling to render the service required by his tenure, to accept instead a pecuniary fine (*scutage*); and these fines enabled the king either to maintain additional troops or to pay the feudal troops to prolong their service. The feudal army thus created almost entirely superseded the national levies of the Anglo-Saxon period, yet these were not altogether given up, and have survived to the present day in two institutions, the *posse comitatus* and the *militia*. The armies with which the English carried on their early wars with France were mostly made up of paid troops, the king usually contracting with some of his most wealthy subjects to levy the number required. At first foreign mercenaries were sometimes included in the troops so raised, but in later times the armies of England were always national. The chief strength of the feudal armies lay in the men-at-arms, who were all mounted, heavily armed, and protected by shields and defensive armour. On the other hand, the paid levies usually consisted of men educated from infancy in the use of the long-bow. The introduction of firearms closed the career of the man-at-arms, and caused the long-bow to be laid aside.

From the accession of Charles I. till the reign of William III. the army was a constant cause of dispute between the king and the Parliament, the latter fearing that a standing army would be used, as it was elsewhere, as an instrument of tyranny. Under the Commonwealth the first standing army was maintained, but after the Restoration it was reduced to the royal guards, besides what was necessary for two or three garrisons. During the reign of Charles II. the forces of England were increased by the addition of a few other regiments, among which was the 1st or Royal Scots, originally the Scottish guard of the kings of France, transferred to England shortly after the Restoration. After Monmouth's rebellion in the reign of James II. there was maintained in England a force of 20,000 men, but at the Revolution this army was to a great extent disbanded. The Bill of Rights declared the keeping of

a standing army within the kingdom except with the consent of Parliament to be unlawful; but it was found necessary to grant that consent in order to subdue the adherents of James in Ireland, and in the first year of William's reign the army was formally recognized on the basis on which it still exists, that its pay, and hence its strength, remain entirely under the control of the House of Commons. The entire administration of the British army, according to the arrangement that has been in force since 1870, belongs to the secretary of state for war. The details of the army administration are in the hands of the officer commanding-in-chief. The number of men to be maintained and the amount of the expenditure on account of the army are determined by an annual vote of the House of Commons based upon estimates laid before the house by the government. The British army is raised entirely by voluntary enlistment, and in this respect differs from every continental force.

According to the system of localization commenced in 1872, the United Kingdom is divided into ten military districts, six of which are in England, three in Ireland, while Scotland makes one by itself. Aldershot, Woolwich, Chatham, and the Curragh are not included in any of these districts. In each district a general officer has command of all the forces within it, including the militia and volunteers. These districts are subdivided into seventy sub-districts called infantry brigade districts, of which fifty-four are in England, eight in Scotland, and eight in Ireland. Each brigade consists of two battalions of the line, a brigade depot, two battalions of militia, besides the reserves of the district. The terms of enlistment are either for twelve years' army service (long service), or for seven years' army service and five years' reserve service (short service). After twelve years' service in the army a soldier may be permitted to re-engage for other nine years, and after the completion of the whole period of twenty-one years' service is entitled to be discharged with a pension. British soldiers under the rank of a commissioned officer receive payment varying from 1s. a day, which is the pay of a private in an infantry regiment, up to 6s. a day, the pay of a regimental serjeant-major in the Royal Engineers. The system of conferring commissions by purchase was abolished by royal warrant of July 20, 1871. According

to the regulations now in force, first commissions are given to successful candidates at the Civil Service Commissioners' open examinations; to university students or lieutenants of militia who pass certain examinations; or to non-commissioned officers specially recommended; while promotion is regulated by seniority principally, but partly by selection. The military strength of the armies of Europe in 1896 was approximately: Great Britain, 730,000; Germany, 4,600,000; France, 3,000,000; Italy, 2,000,000; Russia, 5,100,000, and Turkey, 950,000. The total fighting strength, including the smaller countries, was over 20,000,000 men. See *Militia, Volunteers, Yeomanry, Cavalry*.

Army, American. See *United States*.

Army Corps, one of the largest divisions of an army in the field, comprising all arms, and commanded by a general officer; subdivided into divisions, which may or may not comprise all arms.

Army Discipline and Regulation Act, an act of Parliament passed first in 1879 to supersede the Annual Mutiny Act, investing the crown with large powers to make regulations for the good government of the army, and to frame the Articles of War, which form the military code.

Army Hospital Corps, a body of men belonging to the staff of the British army, and recruited from the army for the purpose of carrying on the work of the hospitals.

Army List, a British official publication issued monthly, containing a list of the officers in the army, of changes gazetted, the stations of regiments, &c.

Army Reserve, in the British army, a force consisting of a first and second class army reserve and a militia reserve. The first class army reserve consists: (1) of men who have completed their period of seven years in the active army, and of men who, after having served not less than three years in the active army, have been transferred to the reserve to complete the term of their engagement; and (2) of soldiers who have purchased their discharge and have enrolled themselves in the reserve for five years. In time of war or when the country is threatened the men of this class become liable for the same services as the active army. The second class army reserve is made up of enrolled pensioners, and is liable only for service at home. The militia reserve is composed of men belonging to the militia who voluntarily enrol themselves in

this reserve for a period of six years, thus rendering themselves liable to be drafted into the regular army in case of war.

Army Schools. See *Military Schools*.

Army Service Corps, a branch of the ordnance store department of a national army, having charge of the supply, store, pay, and transport service.

Army Worm, the very destructive larva of the moth *Heliophila* or *Leucania unipuncta*, so called from its habit of marching in compact bodies of enormous number, devouring almost every green thing it meets. It is about $1\frac{1}{2}$ inches long, greenish in colour, with black stripes, and is found in various parts of the world, but is particularly destructive in North America. The larva of *Sciara militaris*, a European two-winged fly, is also called army worm.

Arnat'to, or **ANNOTTA**. See *Annatto*.

Arnaud (är-nō), **HENRI**, pastor and military leader of the Vaudois of Piedmont; born 1641, died 1721. At the head of his people he successfully withstood the united forces of France and Savoy, and afterwards did good service against France in the War of the Spanish Succession. He had to retire from his country, and was followed by a number of his people, to whom he discharged the duties of pastor till his death.

Arnauld (är-nō), the name of a French family, several members of which greatly distinguished themselves. — **ANTOINE**, an eminent French advocate, was born 1560, died 1619. Distinguished as a zealous defender of the cause of Henry IV., and for his powerful and successful defence of the University of Paris against the Jesuits in 1594. His family formed the nucleus of the sect of the Jansenists (see *Jansenius*) in France. — His son **ANTOINE**, called the *Great Arnauld*, was born February 6, 1612, at Paris; died August 9, 1694, at Brussels. He devoted himself to theology, and was received in 1641 among the doctors of the Sorbonne. He engaged in all the quarrels of the French Jansenists with the Jesuits, the clergy, and the government, was the chief Jansenist writer, and was considered their head. Excluded from the Sorbonne, he retired to Port Royal, where he wrote, in conjunction with his friend Nicole, a celebrated system of logic (hence called the Port Royal Logic). On account of persecution he fled, in 1679, to the Netherlands. His works, which are mainly controversies with the Jesuits or the Calvinists, are very voluminous. — His brother **ROBERT**, born 1588, died 1674, was a

person of influence at the French court, but latterly retired to Port Royal, where he wrote a translation of Josephus and other works. Robert's daughter **ANGÉLIQUE**, born 1624, died 1684, was eminent in the religious world, and was subjected to persecution on account of her unflinching adherence to Jansenism.

Ar'nauts. See *Albania*.

Arndt (ärnt), **ERNST MORITZ**, German patriot and poet; was born 1769, died 1860. He was appointed professor of history at Greifswald in 1806, and stirred up the national feeling against Napoleon in his work *Geist der Zeit* (*Spirit of the Time*). In 1812–13 he zealously promoted the war of independence by a number of pamphlets, poems, and spirited songs, among which it is sufficient to refer to his *Was ist des Deutschen Vaterland?*, *Der Gott, der Eisen wachsen liess*, and *Was blasen die Trompeten?* *Husaren heraus!*, which were caught up and sung from one end of Germany to the other. In 1817 he married a sister of the theologian Schleiermacher, and settled at Bonn in order to undertake the duties of professor of history. He was, however, suspended till 1840 on account of his liberal opinions, when he was restored to his chair on the accession of Frederick William IV.

Arndt, **JOHANN**, celebrated German mystic theologian; born 1555, died 1621. His principal work, *Wahres Christenthum* (*True Christianity*), is still popular in Germany, and has been translated into almost all European languages.

Arne (ärn), **THOMAS AUGUSTINE**, English composer; born at London 1710, died 1778. His first opera, *Rosamond*, was performed in 1733 at Lincoln's-Inn Fields, and was received with great applause. Then followed Fielding's comic opera, *Tom Thumb*, or the *Tragedy of Tragedies*. His style in the *Comus* (1738) is still more original and cultivated. To him we owe the national air *Rule Britannia*, originally given in a popular piece called the *Masque of Alfred*. After having composed two oratorios and several operas he received the title of Doctor of Music at Oxford. He composed, also, music for several of the songs in Shakspeare's dramas, and various pieces of instrumental music.

Arnee', one of the numerous Indian varieties of the buffalo (*Bubalus arni*), remarkable as being the largest animal of the ox kind known. It measures about 7 feet high at the shoulders, and from 9 to $10\frac{1}{2}$ feet

long from the muzzle to the root of the tail. It is found chiefly in the forests at the base of the Himalayas.

Arn'hem, or **ARNHEIM**, a town in Holland, prov. of Gelderland, 18 miles south-west of Zutphen, on the right bank of the Rhine. Pleasantly situated, it is a favourite residential resort, and it contains many interesting public buildings; manufactures cabinet wares, mirrors, carriages, mathematical instruments, &c.; has paper-mills, and its trade is important. In 1795 it was stormed by the French, who were driven from it by the Prussians in 1813. Pop. 1892, 51,105.

Arnhem Land, a portion of the northern territory of S. Australia, lying west of the Gulf of Carpentaria, and forming a sort of peninsula.

Ar'ni, a town of Madras, on the Cheyair River, 16 miles south of Arcot; formerly a large military station; stormed by Clive in 1751, and scene of defeat of Hyder Ali by Sir Eyre Coote in 1782. Pop 4500.

Ar'nica, a genus of plants, natural order *Compositæ*, consisting of some twelve species, one of which is found in Central Europe, *A. montāna* (leopard's bane or mountain tobacco), and in the Western States. It has a perennial root, a stem about 2 feet high, bearing on the summit flowers of a dark golden yellow. In every part of the plant there is an acrid resin and a volatile oil, and in the flowers an acrid bitter principle called *arnicin*. The root contains also a considerable quantity of tannin. A tincture of it is employed as an external application to wounds and bruises.

Ar'nim, **ELIZABETH VON**, a German writer, also known as Bettina, wife of Louis Achim von Arnim, and sister of the poet Clemens Brentano; born at Frankfort in 1785, died at Berlin 1859. Even in her childhood she manifested an inclination towards eccentricities and poetical peculiarities of many kinds. She entered on a correspondence with Goethe and contracted an affected and fantastic love towards him—then in his sixtieth year. In 1835 she published Goethe's *Briefwechsel mit einem Kinde* (Goethe's Correspondence with a Child), containing, among others, the letters that she alleged to have passed between her and Goethe. Her later writings were of a politico-social character.—Her husband, **LUDWIG ACHIM VON ARNIM**, born at Berlin in 1781, died 1831; distinguished himself as a writer of novels. In concert with her brother, Cle-

mens Brentano, he published a collection of popular German songs and ballads entitled *Des Knaben Wunderhorn*.—Her daughter, **GISELA VON ARNIM**, is known in literature by her *Dramatische Werke*, 3 vols. 1857–63.

Ar'no (anc. *Arnus*), a river of Italy which rises in the Etruscan Apennines, makes a sweep to the south and then trends westwards, divides Florence into two parts, washes Pisa, and falls, 4 miles below it, into the Tuscan Sea, after a course of 130 miles.

Arno'bius, an early Christian writer, was a teacher of rhetoric at Sicca Veneria, in Numidia, and in 303 became a Christian; he died about 326. He wrote seven books of *Disputationes adversus Gentes*, in which he refuted the objections of the heathens against Christianity. This work betrays a defective knowledge of Christianity, but is rich in materials for the understanding of Greek and Roman mythology.

Ar'nold, **BENEDICT**, a general in the American army during the war of independence, who rendered his name infamous by his attempt to betray the strong fortress of West Point, with all the arms and immense stores which were there deposited, into the hands of the British. The project failed through the capture of Major André, when Arnold made his escape to the British lines. He received a commission as major-general in the British army, and took part in several marauding expeditions. He subsequently settled in the West Indies, and ultimately came to London, where he died in 1801, aged 61.

Ar'nold, **EDWIN**, **K.C.S.I.**, poet, Sanskrit scholar, and journalist, born 1832. Educated at Oxford, where he took the Newdegate prize for a poem entitled the Feast of Belshazzar in 1852, he was successively second master in King Edward VI.'s College at Birmingham, and principal of the Sanskrit College at Poonah in Bombay. In 1861 he joined the editorial staff of the *Daily Telegraph*, with which he has ever since been connected. He is author of poems, narrative and lyrical, numerous translations from the Greek and Sanskrit; *The Light of Asia*, a poem presenting the life and teaching of Gautama, the founder of Buddhism; *Pearls of the Faith*; *Lotus and Jewel*; &c.

Ar'nold, **MATTHEW**, English critic, essayist, and poet, was born at Laleham, near Staines, 1822, being a son of Dr. Arnold, of Rugby. He was educated at Winchester, Rugby, and Oxford, and became a Fellow

of Oriel College. He was private secretary to Lord Lansdowne, 1847-51; appointed inspector of schools, 1851; professor of poetry at Oxford, 1858; author of *A Strayed Reveller* and other poems, 1848; *Empedocles on Etna*, 1853; *Merope*, 1858; *Essays in Criticism*, 1865; on the Study of Celtic Literature, 1867; *Schools and Universities on the Continent*, 1868; *St. Paul and Protestantism*, 1870; *Literature and Dogma*, 1873; volumes of essays, &c. He received the degree of LL.D. from both Oxford and Edinburgh, and lectured in Britain and in America. He died in 1888.

Ar'nold, THOMAS, head-master of Rugby School, and professor of modern history in the University of Oxford, born at Cowes, in the Isle of Wight, in 1795, died 1842. He entered Oxford in his sixteenth year, and in 1815 he was elected fellow of Oriel College, and both in that year and 1817 he obtained the chancellor's prize for Latin and English essays. After taking deacon's orders he settled at Laleham, near Staines, where he employed himself in preparing young men for the universities. In 1828 he was appointed head-master of Rugby School, and devoted himself to his new duties with the greatest ardour. While giving due prominence to the classics, he deprived them of their exclusiveness by introducing various other branches into his course, and he was particularly careful that the education which he furnished should be in the highest sense moral and Christian. His success was remarkable. Not only did Rugby School become crowded beyond any former precedent, but the superiority of Dr. Arnold's system became so generally recognized that it may be justly said to have done much for the general improvement of the public schools of England. In 1841 he was appointed professor of modern history at Oxford, and delivered his introductory course of lectures with great success. His chief works are his edition of *Thucydides*, his *Roman History*, unhappily left unfinished, and his *Sermons*. There is an admirable memoir of him by A. P. Stanley, Dean of Westminster (London, two vols. 1845).

Ar'nold of Brescia, an Italian religious and political reformer and martyr of the twelfth century. He was one of the disciples of Abelard, and attracted a considerable following by preaching against the corruption of the clergy. Excommunicated by Innocent II., he withdrew to Zürich,

but soon reappearing in Rome he was taken and burned (1155).

Ar'non, a river in Palestine, the boundary between the country of the Moabites and that of the Amorites, latterly of the Israelites, a tributary of the Dead Sea.

Ar'not, **Ar'nut**, a name of the agreeably flavoured farinaceous tubers of the earth-nut or pig-nut (*Bunium flexuosum* and *B. Bulbocastanum*). See *Earth-nut*.

Ar'nott, DR. NEIL, an eminent physician and physicist, was born at Arbroath, 1788, died 1874. Having graduated as M.A. at Aberdeen, he went to England, and was appointed a surgeon in the East India Company's naval service. In 1811 he commenced practice in London. In 1837 he was appointed extraordinary physician to the queen. In 1827 he published *Elements of Physics*, and in 1838 a treatise on *Warming and Ventilation*, &c. He is widely known as the inventor of a stove, which is regarded as one of the most economical arrangements for burning fuel; a ventilating chimney-valve, and his water-bed for the protection of the sick against bed-sores. In 1869 he gave £1000 to each of the four Scotch universities and £2000 to the London University for the promotion of the study of physics.

Arnot'to. See *Annatto*.

Arnsberg (ärnz'berh), a town in Prussia, prov. Westphalia, capital of the government of same name, on the Ruhr. Pop. 6733.—The government of Arnsberg has an area of 2972 square miles, and a population of 1,189,688.

Arnstadt (ärn'stät), a town in Germany, principality of Schwarzburg-Sondershausen, 11 miles south by west of Erfurt, upon the Gera, which divides it into two parts. Has manufactures in leather, &c., and a good trade in grain and timber. Pop. 11,537.

Arnswalde (ärnz'vál-de), a town of Prussia, prov. Brandenburg, 39 miles south-east of Stettin. Pop. 7358.

Ar'nulf, great grandson of Charlemagne, elected King of Germany in A.D. 887; invaded Italy, captured Rome, and was crowned emperor by the pope (896); died A.D. 889.

Aroi'deæ, an order of monocotyledonous plants; same as *Araceæ*.

Ar'olsen, a German town, capital of the principality of Waldeck. Pop. 2476.

Aro'ma, the distinctive fragrance exhaled from spices, plants, &c., generally an agreeable odour, a sweet smell.

Aromatics, drugs, or other substances which yield a fragrant smell, and often a warm pungent taste, as calamus (*Acōrus Calāmus*), ginger, cinnamon, cassia, lavender, rosemary, laurel, nutmegs, cardamoms, pepper, pimento, cloves, vanilla, saffron. Some of them are used medicinally as tonics, stimulants, &c.

Aromatic vinegar, a very volatile and powerful perfume made by adding the essential oils of lavender, cloves, &c., and often camphor, to crystallizable acetic acid. It is a powerful excitant in fainting, languor, and headache.

Aro'na, an ancient Italian town near the s. extremity of Lago Maggiore. Pop. 4474. In the vicinity is the colossal statue of San Carlo Borromeo, 70 feet in height, exclusive of pedestal, 42 feet high.

Aroos'took, a river of the north-eastern U. States and New Brunswick, a tributary of the St. John, length 120 miles.

Arou'ra, Aru'ra, an ancient Greek measure of surface, equal to 21,904 English square feet, or 9 poles 106.3 feet.

Arpad (ār-pād'), the hero of Hungarian ballad and romance, founder of the kingdom of Hungary, born about 870, died 907. The Arpad dynasty reigned till 1301.

Arpeggio (ār-pej'ō), the distinct sound of the notes of an instrumental chord; the striking the notes of a chord in rapid succession, as in the manner of touching the harp instead of playing them simultaneously.

Arpent (ār-pän), formerly a French measure for land, equal to five-sixths of an English acre; but it varied in different parts of France.

Arpino (ār-pē'nō; anc. *Arpinum*), a town of Southern Italy, province of Caserta, celebrated as the birthplace of Caius Marius and Cicero. It manufactures woollens, linen, paper, &c. Pop. 11,535.

Arqua (ār'kwā), a village of Northern Italy, about 13 miles south-west of Padua, where the poet Petrarch died, 18th July, 1374. A monument has been erected over his grave. Pop. 1400.

Ar'quebus, a hand-gun; a species of fire-arm resembling a musket anciently used. It was fired from a forked rest, and sometimes cocked by a wheel, and carried a ball that weighed nearly two ounces. A larger kind used in fortresses carried a heavier shot.

Arraca'cha. See *Aracacha*.

Arracan'. See *Aracan*.

Ar'rack. See *Arack*.

Ar'ragon. See *Aragon*.

Ar'rah, a town of British India, in Shaha-bad district, Bengal, rendered famous during the mutiny of 1857 by the heroic resistance of a body of twenty civilians and fifty Sikhs, cooped up within a detached house, to a force of 3000 sepoy, who were ultimately routed and overthrown by the arrival of a small European reinforcement. Pop. 42,998.

Arraignment (ar-rān'-), the act of calling or setting a prisoner at the bar of a court to plead guilty or not guilty to the matter charged in an indictment or information. The pleas are, the general issue, *i. e.*, not guilty, or in abatement or in bar; the prisoner may demur to the indictment, or he may confess the fact.

Ar'ran, an island of Scotland, in the Firth of Clyde, part of Bute county; length, north to south, 20 miles; breadth, about 10 miles; area, 165 square miles, or 105,814 acres, of which about 15,000 are under cultivation. It is of a wild and romantic appearance, particularly the northern half, where the island attains its loftiest summit in Goatfell, 2866 feet high. The coast presents several indentations, of which that of Lamlash, forming a capacious bay, completely sheltered by Holy Island, is one of the best natural harbours in the west of Scotland. On the small island of Pladda, about a mile from the south shore, a lighthouse has been erected. The geology of Arran has attracted much attention, as furnishing within a comparatively narrow space distinct sections of the great geological formations; while the botany possesses almost equal interest, both in the variety and the rarity of many of its plants. Among objects of interest are relics of Danish forts, standing stones, cairns, &c. Lamlash and Brodick are villages. The island nearly all belongs to the Duke of Hamilton. Pop. 4730, of whom many speak Gaelic.

Arran, EARLS OF. See *Hamilton, Family of*.

Arrangement, in music, the adaptation of a composition to voices or instruments for which it was not originally written; also, a piece so adapted.

Ar'ran Islands. See *Aran*.

Arraro'ba. See *Araroba*.

Arras (ā-rä), a town of France, capital of the department Pas-de-Calais, well built, with several handsome squares and a citadel; cathedral, public library, botanic garden, museum; and numerous flourishing industries. In the middle ages it was famous

for the manufacture of tapestry, to which the English applied the name of the town itself. Pop. 27,041.

Arrest' is the apprehending or restraining of one's person, which, in civil cases, can take place legally only by process in execution of the command of some court or officers of justice; but in criminal cases any man may arrest without warrant or precept, and every person is liable to arrest without distinction, but no man is to be arrested unless charged with such a crime as will at least justify holding him to bail when taken. Although ordinarily applied to any legal seizure of a person, *arrest* is the term more properly used in civil cases, and *apprehension* in criminal cases.

Arrestment, in Scots law, a process by which a creditor may attach money or movable property which a third party holds for behoof of his debtor. In 1870 an act was passed for Scotland which provides that only that part of the weekly wages of labourers, and of workpeople generally, which is in excess of 20s. is liable to arrestment for debt.

Arrest of Judgment, in law, the staying or stopping of a judgment after verdict, for causes assigned. Courts have power to arrest judgment for intrinsic causes appearing upon the face of the record; as when the declaration varies from the original writ; when the verdict differs materially from the pleadings; or when the case laid in the declaration is not sufficient in point of law to found an action upon.

Arre'tium. See *Arezzo*.

Arrhenath'erum, a genus of oat-like grasses, of which *A. elatius*, sometimes called French rye-grass, is a valuable fodder plant.

Ar'ria, the heroic wife of a Roman named Cæcina Pætus. Pætus was condemned to death in 42 A.D., for his share in a conspiracy against the emperor Claudius, and was encouraged to suicide by his wife, who stabbed herself and then handed the dagger to her husband with the words, 'It does not hurt, Pætus!'

Ar'rian, or FLAVIUS ARRIANUS, a Greek historian, native of Niconiædia, flourished in the second century, under the emperors Hadrian and the Antonines. He was first a priest of Ceres; but at Rome he became a disciple of Epictetus, was honoured with the citizenship of Rome, and was advanced to the senatorial and even consular dignities. His extant works are: The Expedition of

Alexander, in seven books; a book on the affairs of India; an Epistle to Hadrian; a Treatise on Tactics; a Periplus of the Sea of Azof and the Red Sea; and his Enchiridion, an excellent moral treatise, containing the discourses of Epictetus.

Ar'ris, in architecture, the line in which the two straight or curved surfaces of a body, forming an exterior angle, meet each other.

Arro'ba (Spanish), a weight formerly used in Spain, and still used in the greater part of Central and South America. In the states of Spanish origin its weight is generally equal to 25.35 lbs. avoirdupois; in Brazil it equals 32.38 lbs.—Also a measure for wine, spirits, and oil, ranging from 2¼ gallons to about 10 gallons.

Arrøe, Danish Island. See *Aerøe*.

Arrondissement (à-rōn-dēs-mān), in France an administrative district, the subdivision of a department, or of the quarters of some of the larger cities.

Arrow, a missile weapon, straight, slender, pointed and barbed, to be shot with a bow. See *Archery*, *Bow*.

Arrowhead (*Sagittaria*), a genus of aquatic plants found in all parts of the world within the torrid and temperate zones, nat. ord. Alismaceæ, distinguished by possessing barren and fertile flowers, with a three-leaved calyx and three coloured petals. The common arrowhead (*S. sagittifolia*) has a tuberous root, nearly globular, and is known by its arrow-shaped leaves with lanceolate straight lobes.

Arrowheaded Characters. See *Cuneiform Writing*.

Arrow Lake, an expansion of the Columbia River, in British Columbia, Canada; about 95 m. long from N. to S.; often regarded as forming two lakes—Upper and Lower Arrow Lake.

Arrow-root, a starch largely used for food and for other purposes. Arrow-root proper is obtained from the rhizomes or rootstocks of several species of plants of the genus *Maranta* (nat. order Marantaceæ), and perhaps owes its name to the scales which cover the rhizome, which have some resemblance to the point of an arrow. Some, however, suppose that the name is due to the fact of the fresh roots being used as an application against wounds inflicted by poisoned arrows, and others say that *arrow* is a corruption of *ara*, the Indian name of the plant. The species from which arrow-root is most commonly obtained is *M. arundi-*

nācēa, hence called the *arrow-root plant*. Brazilian arrow-root, or tapioca meal, is got from the large fleshy root of *Manihot utilisima*, after the poisonous juice has been got rid of; East Indian arrow-root, from the large root-stocks of *Curcūma angustifolia*; Chinese arrow-root, from the creeping rhizomes of *Nelumbium speciosum*; English arrow-root, from the potato; Portland arrow-root, from the corms of *Arum maculatum*; and Oswego arrow-root, from Indian corn.



Arrow-root Plant (*Maranta arundinacea*).—a a, Rhizomes.

Arrowsmith, AARON, a distinguished English cartographer, born 1750, died 1823; he raised the execution of maps to a perfection it had never before attained. His nephew, **JOHN**, born 1790, died 1873, was no less distinguished in the same field; his London Atlas of Universal Geography may be specially mentioned.

Arroyo (ār-rō'yo), the name of two towns of Spain, in Estremadura, the one, called Arroyo del Puerco (population 5727), about 10 miles west of Cáceres; the other, called Arroyo Molinos de Montanches, about 27 miles south-east of Cáceres, memorable from the victory gained by Lord Hill over a French force under General Gerard, 28th October, 1811.

Ar'ru (or **AROO**) **Islands**, a group belonging to the Dutch, south of western New Guinea, and extending from north to south about 127 miles. They are composed of coralline limestone, nowhere exceeding 200 feet above the sea, and are well wooded and tolerably fertile. The natives belong to the Papuan race, with an intermixture of foreign blood, and are partly Christians. The chief exports are trepang, tortoise-shell, pearls, mother-of-pearl, and edible birds'-nests. Pop. of group about 20,000.

Ar'saces, the founder of a dynasty of Parthian kings (256 B.C.), who, taking their name from him, are called Arsacidæ. There were thirty-one in all. See *Parthia*.

Ar'samas, a manufacturing town in the Russian government of Nijni-Novgorod, on

the Tesha, 250 miles east of Moscow, with a cathedral and large convent. Pop. 11,695.

Ar'senal, a royal or public magazine or place appointed for the making, repairing, keeping, and issuing of military stores. An arsenal of the first class should include factories for guns and gun-carriages, small-arms, small-arms ammunition, harness, saddlery, tents, and powder; a laboratory and large store-houses. In arsenals of the second class workshops take the place of the factories. The Royal Arsenal, Woolwich, which manufactures warlike implements and stores for the army and navy, was formed about 1720, and comprises factories, laboratories, &c., for the manufacture and final fitting up of almost every kind of arms and ammunition. Great quantities of military and naval stores are kept at the dockyards of Chatham, Portsmouth, Plymouth, and Pembroke. In France there are various arsenals or dépôts of war material, which latter is manufactured at Mézières, Toulouse, Besançon, &c.; the great naval arsenals are Brest and Toulon. The chief German arsenals are at Spandau, Strassburg, and Dantzic, that at the first-mentioned place being the great centre of the military manufactories. The chief Austrian arsenal is the immense establishment at Vienna, which includes gun-factory, laboratory, small-arms and carriage factories, &c. Russia has her principal arsenal at St. Petersburg, with supplementary factories of arms and ammunition at Briansk, Kiev, and elsewhere. In Italy Turin is the centre of the military factories. There are a number of arsenals in the United States, but individually they are of little importance.

Ar'senic (symbol As, atomic weight 75), a metallic element of very common occurrence, being found in combination with many of the metals in a variety of minerals. It is of a dark-gray colour, and readily tarnishes on exposure to the air, first changing to yellow, and finally to black. In hardness it equals copper; it is extremely brittle, and very volatile, beginning to sublime before it melts. It burns with a blue flame, and emits a smell of garlic. Its specific gravity is 5.76. It forms alloys with most of the metals. Combined with sulphur it forms orpiment and realgar, which are the yellow and red sulphides of arsenic. Orpiment is the true *arsenicum* of the ancients. With oxygen arsenic forms two compounds, the more important of which is arsenious oxide or ar-

senic trioxide (As_2O_3), which is the *white arsenic*, or simply *arsenic* of the shops. It is usually seen in white, glassy, translucent masses, and is obtained by sublimation from several ores containing arsenic in combination with metals, particularly from arsenical pyrites. Of all substances arsenic is that which has most frequently occasioned death by poisoning, both by accident and design. The best remedies against the effects of arsenic on the stomach are hydrated sesquioxide of iron or gelatinous hydrate of magnesia, or a mixture of both, with copious draughts of bland liquids of a mucilaginous consistence, which serve to procure its complete ejection from the stomach. Oils and fats generally, milk, albumen, wheat-flour, oatmeal, sugar or syrup, have all proved useful in counteracting its effect. Like many other virulent poisons it is a safe and useful medicine, especially in skin diseases, when judiciously employed. It is used as a flux for glass, and also for forming pigments. The arsenite of copper (Scheele's green) and a double arsenite and acetate of copper (emerald green) are largely used by painters; they are also used to colour paper-hangings for rooms, a practice not unaccompanied with considerable danger, especially if flock-papers are used or if the room is a confined one. Arsenic has been too frequently used to give that bright green often seen in coloured confectionery, and to produce a green dye for articles of dress and artificial flowers.

Arshin (ār-shēn'), a Russian measure of length equal to 28 inches.

Arsin'oe, a city of ancient Egypt on Lake Moëris, said to have been founded about B.C. 2300, but renamed after Arsinoë, wife and sister of Ptolemy II. of Egypt, and called also *Crocodylopolis*, from the sacred crocodiles kept at it.

Ar'sis, a term applied in prosody to that syllable in a measure where the emphasis is put; in elocution, the elevation of the voice, in distinction from *thesis*, or its depression. *Arsis* and *thesis*, in music, are the strong position and weak position of the bar, indicated by the down-beat and up-beat in marking time.

Ar'son, in common law, the malicious burning of a dwelling-house or outhouse of another man, which by the common law is felony, and which, if homicide result, is murder. Also, the wilful setting fire to any church, chapel, warehouse, mill, barn, agricultural produce, ship, coal-mine, and

the like. In Scotland it is called *wilful fire-raising*. In the United States and Great Britain it is a considerable aggravation if the burning is to defraud insurers.

Art, in its most extended sense, as distinguished from nature on the one hand and from science on the other, has been defined as every regulated operation or dexterity by which organized beings pursue ends which they know beforehand, together with the rules and the result of every such operation or dexterity. In this wide sense it embraces what are usually called the useful arts. In a narrower and purely æsthetic sense it designates what is more specifically termed the fine arts, as architecture, sculpture, painting, music, and poetry. The useful arts have their origin in positive practical needs, and restrict themselves to satisfying them. The fine arts minister to the sentiment of taste through the medium of the beautiful in form, colour, rhythm, or harmony. See *Painting, Sculpture, &c.*—In the middle ages it was common to give certain branches of study the name of arts. (See *Arts*.)

Arta, a gulf, town, and river of north-western Greece. The town (ancient *Ambracia*) was transferred by Turkey to Greece in 1881 (pop. 4990). It stands on the river Arta, which for a considerable distance above its mouth forms a part of the new boundary between Greece and Turkey.

Artaxerxes (Old Pers. *Artakhsathra*, 'the mighty'), the name of several Persian kings:—1. ARTAXERXES, surnamed LONGIMANUS, succeeded his father Xerxes I. B.C. 465. He subjected the rebellious Egyptians, terminated the war with Athens, governed his subjects in peace, and died B.C. 425.—2. ARTAXERXES, surnamed MNEMON, succeeded his father Darius II. in the year 405 B.C. After having vanquished his brother Cyrus he made war on the Spartans, who had assisted his enemy, and forced them to abandon the Greek cities and islands of Asia to the Persians. On his death, B.C. 359, his son Ochus ascended the throne under the name of—3. ARTAXERXES OCHUS (359 to 339 B.C.). After having subjected the Phœnicians and Egyptians, and displayed great cruelty in both countries, he was poisoned by his general Bagoas.

Arte'di, PETER, a Swedish naturalist, born 1705, drowned at Amsterdam 1735. He studied at Upsala, turned his attention to medicine and natural history, and was a friend of Linnæus. His *Bibliotheca Ich-*

thyologica and Philosophia Ichthyologica, together with a life of the author, were published at Leyden in 1738.

Ar'tēmis, an ancient Greek divinity, identified with the Roman Diana. She was the daughter of Zeus (Jupiter) and Leto or Latona, and was the twin sister of Apollo, born in the island of Delos. She is variously represented as a huntress, with bow and arrows; as a goddess of the nymphs, in a chariot drawn by four stags; and as the moon goddess, with the crescent of the moon above her forehead. She was a maiden divinity, never conquered by love, except when Endymion made her feel its power. She demanded the strictest chastity from her worshippers, and she is represented as

having changed Actæon into a stag, and caused him to be torn in pieces by his own dogs, because he had secretly watched her as she was bathing. The Artemisia was a festival celebrated in her honour at Delphi. The famous temple of Artemis at Ephesus was considered one of the wonders of the world, but the goddess worshipped there was very different from the huntress goddess of Greece, being of Eastern origin, and regarded as the symbol of fruitful nature.

Artemi'sia, Queen of Caria, in Asia Minor, about 352–350 B.C., sister and wife of Mausōlus, to whom she erected in her capital, Halicarnassus, a monument, called the Mausolēum, which was reckoned among the seven wonders of the world.



Artesian Well (D) in the London Basin.

Artemi'sia, a genus of plants of numerous species, nat. order Compositæ, comprising mugwort, southern-wood, and wormwood. Certain alpine species are the flavouring ingredient in absinthe. See *Wormwood*.

Artemi'sium, a promontory in Eubœa, an island of the Ægean, near which several naval battles between the Greeks and Persians were fought, B.C. 480.

Ar'temus Ward. See *Browne, Charles Farrar*.

Ar'teries, the system of cylindrical vessels or tubes, membranous, elastic, and pulsatile, which convey the blood from the heart to all parts of the body, by ramifications which as they proceed diminish in size and increase in number, and terminate in minute capillaries uniting the ends of the arteries with the beginnings of the veins. There are two principal arteries or arterial trunks: the *aorta*, which rises from the left ventricle of the heart and ramifies through the whole body, sending off great branches to the head, neck, and upper limbs, and downwards to the lower limbs, &c.; and the *pulmonary artery*, which conveys venous blood from the right ventricle to the lungs, to be purified in the process of respiration.

Arteriot'omy, the opening or cutting of an artery for the purpose of blood-letting, as, for instance, to relieve pressure of the brain in apoplexy.

Arte'sian Wells, so called from the French

province of Artois, where they appear to have been first used on an extensive scale, are perpendicular borings into the ground through which water rises to the surface of the soil, producing a constant flow or stream, the ultimate sources of supply being higher than the mouth of the boring, and the water thus rising by the well-known law. They are generally sunk in valley plains and districts where the lower pervious strata are bent into basin-shaped curves. The rain falling on the outcrops of these saturates the whole porous bed, so that when the bore reaches it the water by hydraulic pressure rushes up towards the level of the highest portion of the strata. The supply is sometimes so abundant as to be used extensively as a moving power, and in arid regions for fertilizing the ground, to which purpose artesian springs have been applied from a very remote period. Thus many artesian wells have been sunk in the Algerian Sahara which have proved an immense boon to the district. The water of most of these is potable, but a few are a little saline, though not to such an extent as to influence vegetation. The hollows in which London and Paris lie are both perforated in many places by borings of this nature. At London they were first sunk only to the sand B B, but latterly into the chalk C C. One of the most celebrated artesian wells is that of Grenelle near Paris, 1798 feet deep, completed in

1841, after eight years' work. One of the deepest is at Rochefort in France, 2765 feet. Wells of great depth are also found in America. As the temperature of water from great depths is invariably higher than that at the surface, artesian wells have been made to supply warm water for heating manufactories, greenhouses, hospitals, fish-ponds, &c. The petroleum wells of America are of the same technical description. These wells are now made with larger diameters than formerly, and altogether their construction has been rendered much more easy in modern times. See *Boring*.

Arteveld, ARTEVELDE (âr'te-velt, âr'te-vel-de), the name of two men distinguished in the history of the Low Countries. 1. JACOB VAN, a brewer of Ghent, born about 1300; was selected by his fellow-townsmen to lead them in their struggles against Count Louis of Flanders. In 1338 he was appointed captain of the forces of Ghent, and for several years exercised a sort of sovereign power. A proposal to make the Black Prince, son of Edward III. of England, governor of Flanders led to an insurrection, in which Arteveld lost his life (1345).—2. PHILIP, son of the former, at the head of the forces of Ghent gained a great victory over the Count of Flanders, Louis II., and for a time assumed the state of a sovereign prince. His reign proved short-lived. The Count of Flanders returned with a large French force, fully disciplined and skilfully commanded. Arteveld was rash enough to meet them in the open field at Roosebeke, between Courtray and Ghent, in 1382, and fell with 25,000 Flemings.

Arthri'tis (Greek *arthron*, a joint), any inflammatory distemper that affects the joints, particularly chronic rheumatism or gout.

Arthro'dia, a species of articulation, in which the head of one bone is received into a shallow socket in another; a ball-and-socket joint.

Arthrop'oda, one of the two primary divisions (Anarthropoda being the other) into which modern naturalists have divided the sub-kingdom Annulosa, having the body composed of a series of segments, some always being provided with articulated appendages. The division comprises Crustaceans, Spiders, Scorpions, Centipedes, and Insects.

Arthrozo'a, a name sometimes given to all articulated animals, including the arthropoda and worms.

Arthur, CHESTER ALAN, twenty-first

president of the United States, born 1830, died 1886; was the son of Scottish parents, his father being pastor of Baptist churches in Vermont and New York. He chose law as a profession, and practised in New York. As a politician he became a leader in the Republican party. During the civil war he was energetic as quarter-master general of New York in getting troops raised and equipped. He was afterwards collector of customs for the port of New York. In 1880 he was elected vice-president, succeeding as president on the death of Garfield in 1881, and in this position he gave general satisfaction.

Ar'thur, KING, an ancient British hero of the sixth century, son of Uther Pendragon and the Princess Igerna, wife of Gorlois, duke of Cornwall. He married Guinevere or Ginevra; established the famous order of the Round Table; and reigned, surrounded by a splendid court, twelve years in peace. After this, as the poets relate, he conquered Denmark, Norway, and France, slew the giants of Spain, and went to Rome. From thence he is said to have hastened home on account of the faithlessness of his wife, and Modred, his nephew, who had stirred up his subjects to rebellion. He subdued the rebels, but died in consequence of his wounds, on the island of Avalon. The story of Arthur is supposed to have some foundation in fact, and has ever been a favourite subject with our romanticists and our poets. It is generally believed that Arthur was one of the last great Celtic chiefs who led his countrymen from the west of England to resist the settlement of the Saxons in the country. But many authorities regard him as a leader of the Cymry of Cumbria and Strath-Clyde against the Saxon invaders of the east coast and the Picts and Scots north of the Forth and the Clyde.

Arthur's Seat, a picturesque hill within the Queen's Park in the immediate vicinity of Edinburgh; has an altitude of 822 feet; descends rollingly to the N. and E. over a base each way of about five furlongs; presents an abrupt shoulder to the S., and breaks down precipitously to the W. It is composed of a diversity of eruptive rocks, with some interposed and uptilted sedimentary ones; and derives its name somehow from the legendary King Arthur.

Ar'tiad (Gr. *artios*, even-numbered), in chemistry, a name given to an element of even equivalency, as a dyad, tetrad, &c.;

opposed to a perissad, an element of uneven equivalency, such as a monad, triad, &c.

Artichoke (*Cynara Scolymus*), a well-known plant of the nat. order Compositæ, somewhat resembling a thistle, with large divided prickly leaves. The erect flower-stem terminates in a large round head of numerous imbricated oval spiny scales which surround the flowers. The fleshy bases of the scales with the large receptacle are the parts that are eaten. Artichokes were introduced into England early in the sixteenth century. The Jerusalem artichoke (a corruption of the Ital. *girasole*, a sunflower), or *Helianthus tuberösus*, is a species of sunflower, whose roots are used like potatoes.

Article, in grammar, a part of speech used before nouns to limit or define their application. In English *a* or *an* is usually called the indefinite article (the latter form being used before a vowel sound), and *the*, the definite article, but they are also described as adjectives. *An* was originally the same as *one*, and *the* as *that*.

Articles of Confederation AND PERPETUAL UNION OF THE COLONIES (the original thirteen), were first submitted by Dr. Benjamin Franklin, July 21, 1775, to the assembly of state delegates called the Continental Congress. They formed the basis of a plan reported to that congress, July 12, 1776, which after amendment was agreed to, Nov. 17, 1777, and ratification completed by the states March 1, 1781. These articles formed the loose compact of confederation, and settled the powers of that congress which continued, very feebly, the Federal government until the adoption of the Constitution of the United States in 1787.

Articles, THE SIX, in English ecclesiastical history, articles imposed by a statute (often called the Bloody Statute) passed in 1541, in the reign of Henry VIII. They decreed the acknowledgment of transubstantiation, the sufficiency of communion in one kind, the obligation of vows of chastity, celibacy of the clergy, and auricular confession. The act was repealed in 1549.

Articles, THE THIRTY-NINE, of the Church of England, a statement of the particular points of doctrine, thirty-nine in number, maintained by the English Church; first promulgated by a convocation held in London in 1562-63, and confirmed by royal authority; founded on and superseding an older code issued in the reign of Edward VI. The five first articles contain a profession of faith in the Trinity; the incarnation of

Jesus Christ, his descent to hell, and his resurrection; the divinity of the Holy Ghost. The three following relate to the canon of the Scripture. The eighth article declares a belief in the Apostles', Nicene, and Athanasian creeds. The ninth and following articles contain the doctrine of original sin, of justification by faith alone, of predestination, &c. The nineteenth, twentieth, and twenty-first declare the church to be the assembly of the faithful; that it can decide nothing except by the Scriptures. The twenty-second rejects the doctrine of purgatory, indulgences, the adoration of images, and the invocation of saints. The twenty-third decides that only those lawfully called shall preach or administer the sacraments. The twenty-fourth requires the liturgy to be in English. The twenty-fifth and twenty-sixth declare the sacraments effectual signs of grace (though administered by evil men), by which God excites and confirms our faith. They are two: baptism and the Lord's supper. Baptism, according to the twenty-seventh article, is a sign of regeneration, the seal of our adoption, by which faith is confirmed and grace increased. In the Lord's supper, according to article twenty-eighth, the bread is the communion of the body of Christ, the wine the communion of his blood, but only through faith (article twenty-ninth); and the communion must be administered in both kinds (article thirty). The twenty-eighth article condemns the doctrine of transubstantiation, and the elevation and adoration of the host; the thirty-first rejects the sacrifice of the mass as blasphemous; the thirty-second permits the marriage of the clergy; the thirty-third maintains the efficacy of excommunication. The remaining articles relate to the supremacy of the king, the condemnation of Anabaptists, &c. They were ratified anew in 1604 and 1628. All candidates for ordination must subscribe these articles. This formulary is now accepted by the Episcopalian Churches of Scotland, Ireland, and America.

Articles of War, a code of laws for the regulation of the military forces of Great Britain and Ireland, issued prior to 1879, in pursuance of the annually-renewed Mutiny Act. In 1879 the Army Discipline Act consolidated the provisions of the Mutiny Act with the Articles of War. This act was amended in 1881, and now the complete military code is contained in the Army Act of 1881.

In the United States army the Articles of War form an elaborate code, thoroughly revised in 1880, but subject at all times to the legislation of Congress.

Articula'ta, the third great section of the animal kingdom according to the arrangement of Cuvier, including all the invertebrates with the external skeleton forming a series of rings articulated together and enveloping the body, distinct respiratory organs, and an internal ganglionated nervous system along the middle line of the body. They are divided into five classes, viz. Crustacea, Arachnida, Insecta, Myriapoda, and Annelida. The first four classes are now commonly placed together under the name of *Arthropoda*, and the whole are sometimes called *Arthrozoa*.

Articula'tion, in anat. a joint; the joining or juncture of the bones. This is of three kinds: (1) *Diarthrōsis*, or a movable connection, such as the ball-and-socket joint; (2) *Synarthrōsis*, immovable connection, as by suture, or junction by serrated margins; (3) *Symphysis*, or union by means of another substance, by a cartilage, tendon, or ligament.

Artil'ery, all sorts of great guns, cannon, or ordnance, mortars, howitzers, machine-guns, &c., together with all the apparatus and stores thereto belonging, which are taken into the field, or used for besieging and defending fortified places. The improvements and alterations in artillery and projectiles have of late years been extraordinary, there being in the British service alone over 100 patterns of modern guns. Of these the largest is the 111-ton gun intended for ships and fortresses, the next largest being the 100-ton gun for land service, and the 80-ton gun for land and sea service. The most important modern improvements in artillery, besides the increase in size, is the general adoption of rifled ordnance, breech-loaders, and machine-guns. See *Cannon*, and other articles.

The name *artillery* is also given to the land troops by whom these arms are served, whether they accompany an army in the field, take part in sieges, or occupy fixed posts. The British artillery is known collectively as the 'Royal Regiment of Artillery.' It numbers about 1400 officers and 33,500 men, distributed in more than 200 batteries of horse, field, and garrison artillery. Besides this body, the volunteer artillery of Britain numbers upwards of 40,000 men. There are at present in the

regular army of the United States five regiments of artillery, with 284 officers and 2381 enlisted men. The larger guns, of breech-loading pattern, are 12-inch, 10-inch and 8-inch sizes.—The name *Park of Artillery* is given to the entire train of artillery accompanying a military force, with the apparatus, ammunition, &c., as well as the battalion appointed for its service and defence.

Artillery, ROYAL REGIMENT OF. See *Artillery*.

Artillery Company, THE HONOURABLE, the oldest existing body of volunteers in Great Britain, instituted in 1585; revived in 1610. It comprises six companies of infantry, besides artillery, grenadiers, light infantry, and yagers, and furnishes a guard of honour to the sovereign when visiting London.—THE ANCIENT AND HONOURABLE, of Boston, Mass., copied from that of London, was formed in 1637—first regularly organized military co. in America.

Artillery Schools, institutions established for the purpose of giving a special training to the officers, and in some cases the men, belonging to the artillery service. In Great Britain the artillery schools are at Woolwich and Shoeburyness. The Department of Artillery studies at Woolwich gives artillery officers the means of continuing their studies after they have completed the usual course at the Royal Military College, and of qualifying for appointments requiring exceptional scientific attainments. The School of Gunnery at Shoeburyness gives instruction in gunnery to officers and men, and conducts all experiments connected with artillery and stores. An artillery school, Fortress Monroe, U. States, first established in 1823, discontinued, and re-established in 1867, gives instruction both theoretical and practical. The artillery regiments of the regular army have each one foot-battery at the school; term of instruction one year.

Artiodac'tyla (Gr. *artios*, even numbered, *daktȳlos*, a finger or toe), a section of the Ungulata or hoofed mammals, comprising all those in which the number of the toes is even (two or four), including the ruminants, such as the ox, sheep, deer, &c., and also a number of non-ruminating animals, as the hippopotamus and the pig.

Artisans' and Labourers' Dwellings Act, an English act of parliament passed in 1868 to empower town-councils and other local authorities to demolish or improve dwellings unfit for human habitation, and to build and

maintain better dwellings in lieu thereof. Other acts for the same object were passed in 1875, 1879, and 1882.

Artocarpa'ceæ, a natural order of plants, the bread-fruit order, by some botanists ranked as a sub-order of the Urticaceæ or nettles. They are trees or shrubs, with a milky juice, which in some species hardens into caoutchouc, and in the cow-tree (*Brosimum Galactodendron*) is a milk as good as that obtained from the cow. Many of the plants produce an edible fruit, of which the best known is the bread-fruit (*Artocarpus*).

Artois (âr-twä), a former province of France, anciently one of the seventeen provinces of the Netherlands, now almost completely included in the department of Pas de Calais.

Arts, the name given to certain branches of study in the middle ages, originally called the 'liberal arts' to distinguish them from the 'servile arts' or mechanical occupations. These arts were usually given as grammar, dialectics, rhetoric, music, arithmetic, geometry, and astronomy. Hence originated the terms 'art classes,' 'degrees in arts,' 'Master of Arts,' &c., still in common use in universities, the faculty of arts being distinguished from those of divinity, law, medicine, or science.

Art Union, an association for encouraging art, an object which it mainly pursues by disposing of pictures, sculptures, &c., by lottery among subscribers. They seem to have originated in France during the time of Napoleon I. They soon afterwards took root in Germany, where their influence has been most powerful and beneficial. Many societies of this kind exist in this country; but they are of a local character.

Artvin, a Russian town, in the Caucasus, about 35 m. inland from Batoum. Pop. 7850.

Aruba (ä-rö'bä), an island off the north coast of Venezuela, belonging to Holland (a dependency of Curaçoa), about 30 m. long and 7 broad; surface generally rock, quartz being abundant, and containing considerable quantities of gold; a phosphate which is exported for manure is also abundant. The climate is healthy. Pop. 4500.

Aru Islands. See *Arru Islands*.

A'rum, a genus of plants, nat. order Araceæ. *A. maculatum* (the common wake-robin, or lords-and-ladies) is abundant in woods and hedges in England and Ireland. It has acrid properties, but its corm yields a starch, which is known by the name of

Portland sago or arrow-root. The dragon-root, or jack-in-the-pulpit, inhabitant of wet woodlands, is common in United States; fruit, a bunch of bright scarlet berries.



Cuckoo-pint or Wake-robin (*Arum maculatum*).—a, Spadix. b b, Stamens or male flowers. c c, Ovaries or female flowers. d, Spathe or sheath. e, Corm.

Ar'undel, a town in Sussex, England, on the river Arun, 4 miles from its mouth, the river being navigable to the town for vessels of 250 tons. The castle of Arundel, the chief residence of the dukes of Norfolk, stands on a knoll on the north-east side of the town. Pop. 1891, 2644.

Ar'undel, THOMAS, third son of Richard Fitz-Alan, Earl of Arundel, born 1352, died 1413. He was chancellor of England and Archbishop of Canterbury. He concerted with Bolingbroke to deliver the nation from the oppression of Richard II., and was a bitter persecutor of the Lollards and followers of Wickliffe.

Arundelian Marbles, a series of ancient sculptured marbles discovered by William Petty, who explored the ruins of Greece at the expense of and for Thomas Howard, earl of Arundel, who lived in the time of James I. and Charles I., and was a liberal patron of scholarship and art. After the Restoration they were presented by the grandson of the collector to the University of Oxford. Among them is the Parian Chronicle, a chronological account of the principal events in Grecian, and particularly in Athenian history, during a period of 1318 years, from the reign of Cecrops (B.C. 1450) to the archonship of Diognetus (B.C. 264).

Arundel Society, a society instituted in London in 1848 for promoting the knowledge of art by the publication of facsimiles and photographs.

Arun'do, a genus of grasses now usually limited to the *A. Donax* and the species

which most nearly agree with it, commonly called reeds. *A. Donax* is a native of the south of Europe, Egypt, and the East. It is one of the largest grasses in cultivation, and attains a height of 9 or 10 feet, or even more. Its canes or stems are used for fishing rods, &c.

Aruspices (a-rus'pi-sēz), HARUSPICES, a class of priests in ancient Rome, of Etrurian origin, whose business was to inspect the entrails of victims killed in sacrifice, and by them to foretell future events.

Aruwimi, a large river of equatorial Africa, a tributary of the Congo, which it enters from the north.

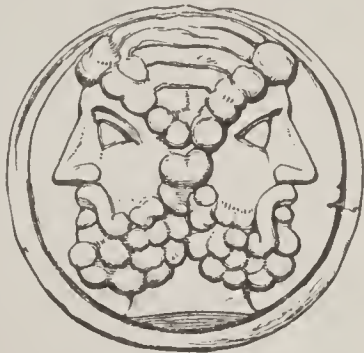
Arval Brothers (*Fratres Arvāles*), a college or company of twelve members elected for life from the highest ranks in ancient Rome, so called from offering annually public sacrifices for the fertility of the fields (*L. arrum*, a field).

Arve (ärv), a river rising in the Savoyan Alps, passes through the valley of Chamouni, and falls into the Rhone near Geneva, after a course of about 50 miles.

Arvic'ola, a genus of rodent animals, sub-order Muridæ or Mice. *A. amphibia* is the water-vole (or water-rat), and *A. agrestis* is the field-vole or short-tailed field-mouse.

A'ryan, or INDO-EUROPEAN FAMILY OF LANGUAGES. See *Indo-European Family*.

As, a Roman weight of 12 ounces, answering to the libra or pound, and equal to 237.5 grains avoirdupois, or 327.1873 grammes, French measure. In the most ancient times of Rome the copper or bronze coin which was called *as* actually weighed an *as*, or a pound, but in 264 B.C. it was reduced to 2 oz., in 217 to 1 oz., and in 191 to $\frac{1}{2}$ oz.



As (half real size).—Specimen in British Museum.

A'sa, great grandson of Solomon and third king of Judah; he ascended the throne at an early age, and distinguished himself by his zeal in rooting out idolatry with its attendant immoralities. He died after a prosperous reign of forty-one years.

Asafe'tida, ASAFÆTIDA, a fetid inspissated sap from Central Asia, the solidified juice of the *Narthex Asafetida*, a large umbelliferous plant. It is used in medicine

as an anti-spasmodic, and in cases of flatulency, in hysteric paroxysms, and other nervous affections. Notwithstanding its very disagreeable odour it is used as a seasoning in the East, and sometimes in Europe. An inferior sort is the product of certain species of *Ferula*.

Asagræ'a. See *Sabadilla*.

Asa'ma, an active volcano of Japan, about 50 miles north-west of Tokio, 8260 feet high.

A'saph, a Levite and psalmist appointed by David as leading chorister in the divine services. His office became hereditary in his family, or he founded a school of poets and musicians, which were called, after him, 'the sons of Asaph.'

Asaph, St., a small cathedral city and bishop's see in Wales, 15 miles north-west of Flint; founded about 550 by St. Kentigern or St. Mungo, bishop of Glasgow, and named after his disciple St. Asaph, from whom both the diocese and town took their name. The cathedral was built about the close of the fifteenth century; it consists of a choir, a nave, two aisles, and a transept. Pop. 1900.

Asarabac'ca, a small hardy European plant, nat. order Aristolochiaceæ (*Asarum europæum*). Its leaves are acrid, bitter, and nauseous, and its root is extremely acrid. Both the leaves and root were formerly used as an emetic. The species *A. canadense*, the Canada snake-root, is found in the Western States.

As'arum. See *Asarabacca*.

Asben, AIR, or AHIR, a kingdom of Africa, in the Sahara, between lat. 16° 15' and 20° 15' N., and lon. 6° 15' and 9° 30' E. It consists of a succession of mountain groups and valleys, with a generally western slope, and attains in its highest summits a height of over 5000 feet. The valleys, though separated by complete deserts, are very fertile, and often of picturesque appearance. The inhabitants are Tuaregs or Berbers, with an admixture of negro blood. They live partly in villages, partly as nomads. It is nominally ruled over by a sultan, who resides in the capital, Agades. Pop. about 60,000.

Asbes'tos, ASBESTUS, a remarkable and highly useful mineral, a fibrous variety of several members of the hornblende family, composed of separable filaments, with a silky lustre. The fibres are sometimes delicate, flexible, and elastic; at other times stiff and brittle. It is incombustible, and anciently

was wrought into a soft, flexible cloth, which was used as a shroud for dead bodies. In modern times it has been manufactured into incombustible cloth, gloves, felt, paper, &c.; is employed in gas-stoves; is much used as a covering to steam boilers and pipes; is mixed with metallic pigments, and used as a paint on wooden structures, roofs, partitions, &c., to render them fireproof, and is employed in various other ways, the manufacture having recently greatly developed. Some varieties are compact and take a fine polish, others are loose, like flax or silky wool. *Ligniform asbestos*, or *mountain-wood*, is a variety presenting an irregular filamentous structure, like wood. *Rock-cork*, *mountain-leather*, *fossil-paper*, and *fossil-flax* are varieties. Asbestos is found in many parts of the world, chiefly in connection with serpentine.

Asbjørnsen (äs'byeurn-sen), PETER KRISTEN, born 1812, died 1885, a distinguished Norwegian naturalist and collector of the popular tales and legends, fairy stories, &c., of his native country.

Asbury Park, a small town on the coast of New Jersey, U.S., a great summer resort, its pop. being then increased from 4000 to 20,000 or 25,000.

As'calon, or **ASH'KELON**, a ruined town of Palestine, on the sea-coast, 40 miles w.s.w. of Jerusalem. It was occupied by the Crusaders under Richard I. after a great battle with Saladin (1192).

Asca'nius, the son of Æneas and Creusa, and the companion of his father's wanderings from Troy to Italy.

As'caris, a genus of intestinal worms. See *Nematelmia*.

Ascen'sion (discovered on Ascension Day), an island of volcanic origin belonging to Britain, near the middle of the South Atlantic Ocean, about lat. 7° 55' s.; lon. 14° 25' w.; 800 miles north-west of St. Helena; area, about 36 square miles; pop. 165. It is retained by Britain mainly as a station at which ships may touch for stores. It has a steam factory, naval and victualling yards, hospitals, and a coal depot. It is celebrated for its turtle, which are the finest in the world. Wild goats are plentiful, and oxen, sheep, pheasants, Guinea-fowl, and rabbits have been introduced, and thrive well. Georgetown, the seat of government, stands on the west side of the island, which is governed under the admiralty by a naval officer.

Ascension, **RIGHT**, of a star, in astron.,

the arc of the equator intercepted between the first point of Aries and that point of the equator which comes to the meridian at the same instant with the star.

Ascension Day, the day on which the ascension of the Saviour is commemorated, often called *Holy Thursday*: a movable feast, always falling on the Thursday but one before Whitsuntide.

Ascet'ics, a name given in ancient times to those Christians who devoted themselves to severe exercises of piety and strove to distinguish themselves from the world by abstinence from sensual enjoyments and by voluntary penances. Ascetics and asceticism have played an important part in the Christian church, but the principle of striving after a higher and more spiritual life by subduing the animal appetites and passions has no necessary connection with Christianity. Thus there were ascetics among the Jews previous to Christ, and asceticism was inculcated by the Stoics, while in its most extreme form it may still be seen among the Brahmins and Buddhists. Monasticism was but one phase of asceticism.

Asch (âsh), a town of Austria-Hungary, in the extreme north-western corner of Bohemia, with manufactures of cotton, woollen, and silk goods, bleachfields, dye-works, &c. Pop. 13,209.

Aschaffenburg (â-shâf'en-börh), a town of Bavaria, on the Main and Aschaff, 26 miles E.S.E. of Frankfort. The chief edifice is the castle of Johannisberg, built in 1605-14, and for centuries the summer residence of the elector. There are manufactures of coloured paper, tobacco, liqueurs, &c. Pop. 12,611.

Ascham (as'kam), **ROGER**, a learned Englishman, born in 1515 of a respectable family in Yorkshire, died 1568. He was entered at Cambridge, 1530, and was chosen fellow in 1534 and tutor in 1537. He became Latin secretary to Edward VI. and also to Mary. Was preceptor to Elizabeth during her girlhood and her secretary after she ascended the throne. In 1544 he wrote his *Toxophilus*, or *Schole of Shooting*, in praise of his favourite amusement and exercise—archery. In 1563-68 he wrote his *Schoolmaster*, a treatise on the best method of teaching children Latin. Some of his writings, including many letters, were in Latin. He wrote the best English style of his time. His life was written by Dr. Johnson to accompany an edition of his works published in 1769.

Aschersleben (ăsh'ĕrz-lă-ben), a town of Prussian Saxony, in the district of Magdeburg, near the junction of the Elbe with the Wipper. Industries: woollens, machinery and metal goods, sugar, paper, &c. Pop. 21,519.

Ascid'ia (Greek, *askos*, a wine-skin', the name given to the 'Sea-squirts' or main section of the Tunicata, molluscos animals of low grade, resembling a double-necked bottle, of a leathery or gristly nature, found at low-water mark on the sea-beach, and



Ascidians.

1, Perophora: a, mouth; b, vent; c, intestinal canal; d, stomach; e, common tubular stem. 2, Ascidia echinata. 3, Ascidia virginea. 4, Cynthia quadragularis. 5, Botryllus violaceus.

dredged from deep water attached to stones, shells, and fixed objects. One of the prominent openings admits the food and the water required in respiration, the other is the excretory aperture. A single *ganglion* represents the nervous system, placed between the two apertures. Male and female reproductive organs exist in each ascidian. They pass through peculiar phases of development, the young ascidian appearing like a tadpole-body. They may be *single* or *simple*, *social* or *compound*. In *social ascidians* the peduncles of a number of individuals are united into a common tubular stem, with a partial common circulation of blood. In these animals evolutionists see a link between the Mollusca and the Vertebrata.

Asclepiada'ceæ, an order of gamopetalous exogenous plants, the distinguishing characteristic of which is that the anthers adhere to the five stigmatic processes, the whole sexual apparatus forming a single mass. The members of this order are shrubs, or sometimes herbaceous plants, occasionally climbing, almost always with a milky juice. Many of them are employed as purgatives,

diaphoretics, tonics, and febrifuges, and others as articles of food. *Asclepias* is the typical genus. See *Asclepias*, *Calotropis*, *Stapelia*, *Stephanotis*.

Ascle'piades (-dēz), the name of a number of ancient Greek writers—poets, grammarians, &c.—of whom little is known, and also of several ancient physicians, the most celebrated of whom was ASCLEPIADES, of Bithynia, who acquired considerable repute at Rome about the beginning of the first century B.C.

Ascle'pias, or SWALLOW-WORT, a genus of plants, the type and the largest genus of the nat. order Asclepiadaceæ. Most of the species are North American herbs, having opposite, alternate, or verticillate leaves. Many of them possess powerful medicinal qualities. *A. decumbens* is diaphoretic and sudorific, and has the singular property of exciting general perspiration without increasing in any sensible degree the heat of the body; *A. curassavica* is emetic, and its roots are frequently sent to England as ipecacuanha; the roots of *A. tuberosa* are famed for diaphoretic properties. Many other species are also used as medicines, and several are cultivated for the beauty of their flowers.

As'coli, or ASCOLI PICENO (anc. *Asculum*), town in Middle Italy, capital of the province of the same name, on the Tronto, 14 miles above its embouchure in the Adriatic. It has old bridges, walls, and gates, a fine cathedral, &c. Pop. 11,199.—The province has an area of 809 sq. miles, a pop. of 222,146.

As'coli Satriano (anc. *Asculum Apulum*), a town of S. Italy, prov. Foggia. Pop. 6478.

Ascomyce'tes (-tēz), a large group of fungi, so called from their spores being contained in asci or sacs.

Asco'nus (QUINTUS A. PEDIANUS), a Roman writer of the first century after Christ, who wrote a life of Sallust, a reply to the detractors of Virgil, and commentaries to Cicero's orations, some of which are extant.

As'cot, an English race-course adjacent to the s.w. extremity of the great park of Windsor. The races, which take place in the second week in June, constitute, for value of stakes and quality of horses, the best meeting of the year, as it is the most fashionable.

As'gard (lit. gods' yard, or the abode of the gods), in Scand. myth. the home of the gods or *Æsir*, rising, like the Greek Olympus, from *midgard*, or the middle world, that

is, the earth. It was here that Odin and the rest of the gods, the twelve Æsir, dwelt—the gods in the mansion called Gladsheim, the goddesses dwelling in Vingulf. Walhalla, in which heroes slain in battle dwelt, was also here. Below the boughs of the ash-tree Yggdrasil the gods assembled every day in council.

Asgill (as'gil), JOHN, an eccentric English writer, a lawyer by profession; born 1659, died 1738. In 1699 he published a pamphlet to prove that Christians were not necessarily liable to death, death being the penalty imposed for Adam's sin and Christ having satisfied the law. Having crossed over to Ireland, he was beginning to get into a good practice, and was elected to the Irish House of Commons, when his pamphlet was ordered to be burned by the public hangman, and he himself was expelled the house. His whole subsequent life was passed in pecuniary and other troubles, mostly in the Fleet or within the rules of the King's Bench.

Ash (*Fraxinus*), a genus of deciduous trees belonging to the nat. order Oleaceæ, having imperfect flowers and a seed-vessel prolonged into a thin wing at the apex (called a *samara*). There are a good many species, chiefly indigenous to Europe and North America. The common ash (*F. excelsior*), indigenous to Britain, has a smooth bark, and grows tall and rather slender. The branches are flattened; the leaves have five pairs of pinnæ, terminate l by an odd one, dark-green in colour; lanceolate, with serrated edges. The flowers are produced in loose spikes from the sides of the branches, and are succeeded by flat seeds which ripen in autumn. It is one of the most useful of British trees on account of the excellence of its hard tough wood and the rapidity of its growth. There are many varieties of it, as the weeping-ash, the curled-leaved ash, the entire-leaved ash, &c. The flowering or manna ash (*F. Ornus*), by some placed in a distinct genus (*Ornus*), is a native of the south of Europe and Palestine. It yields the substance called manna, which is obtained by making incisions in the bark, when the juice exudes and hardens. Among American species are the white ash (*F. americana*), with lighter bark and leaves; the red or black ash (*F. pubescens*), with a brown bark; the black ash (*F. sambucifolia*), the blue ash, the green ash, &c. They are all valuable trees. The mountain-ash or rowan belongs to a different order.

Ash, **ASHES**, the incombustible residue of organic bodies (animal or vegetable) remaining after combustion; in common usage, any incombustible residue of bodies used as fuel; as a commercial term, the word generally means the ashes of vegetable substances, from which are extracted the alkaline matters called potash, pearl-ash, kelp, barilla, &c.

Ashan'go, a region in the interior of Southern Africa between lat. 1° and 2° s., and between the Ogowe and the Lower Congo, a mountainous country in the territory recently taken into the possession of the French. The inhabitants belong to the Bantu stock, and among them are a dwarfish people, the Obongo, said to be about 4½ feet high at most.

Ashantee, a kingdom of West Africa, in the interior of the Gold Coast, and to the north of the river Prah, with an area of about 70,000 sq. miles. It is in great part hilly, well-watered, and covered with dense tropical vegetation. The country round the towns, however, is carefully cultivated. The crops are chiefly rice, maize, millet, sugarcane, and yams, the last forming the staple vegetable food of the natives. The domestic animals are cows, horses of small size, goats, and a species of hairy sheep. The larger wild animals are the elephant, rhinoceros, giraffe, buffalo, lion, hippopotamus, &c. Birds of all kinds are numerous, and crocodiles and other reptiles abound. Gold is abundant, being found either in the form of dust or in nuggets. The Ashantees are warlike and ferocious, with a love of shedding human blood amounting to a passion, human sacrifices being common. Polygamy is practised by them to an enormous extent. They make excellent cotton cloths, articles in gold, and good earthenware, tan leather, and make sword-blades of superior workmanship. The government is a despotic monarchy. The chief town is Coomassie, which, before being burned down in 1874, was well and regularly built with wide streets, and had from 70,000 to 100,000 inhabitants. The British first came in contact with the Ashantees in 1807, and hostilities continued off and on till 1826, when they were driven from the seacoast. Immediately after the transfer of the Dutch settlements on the Gold Coast to Britain in 1872—when the entire coast remained in British hands—the Ashantees reclaimed the sovereignty of the tribes round the settlement of Elmina. This

brought on a sanguinary war, leading to a British expedition in 1874, in which Coomassie was captured, and British supremacy established along the Gold Coast. Pop. estimated at between 1,000,000 and 2,000,000.

Ash'borne, a town of England, in Derbyshire, 12 miles N.W. of Derby, with manufactures of cottons and lace. Pop. 3485.

Ash'burton, a town in Devonshire, England, 16 m. S.W. of Exeter, a parl. bor. till 1868, and still giving name to a parl. division. Pop. about 2900.

Ash'burton, ALEXANDER BARING, LORD, a British statesman and financier, born 1774, died 1864. A younger son of Sir Francis Baring, he was bred to commercial pursuits, which for some years kept him in the United States and Canada, and in 1810 he became head of the great firm of Baring Brothers & Co. After serving in Parliament for many years he was raised to the peerage in 1835, after being a member of Peel's government (1834-35). See next art.

Ash'burton Treaty, a treaty concluded at Washington, 1842, by Alexander Baring, Lord Ashburton, and the President of the United States; it defined the boundaries between the States and Canada, &c.

Ashby-de-la-Zouch (ash'bi-del-a-zöch'), a town in Leicestershire, England, on the borders of Derbyshire, with manufactures of hosiery, leather, &c. Pop. 4536.

Ash'dod, a place on the coast of Palestine, formerly one of the chief cities of the Philistines, now an insignificant village.

Asheville, a thriving town in North Carolina, capital of Buncomb county, 115 miles west of Raleigh, has 2 banks and 3 weekly papers. Pop. in 1890, 10,235.

Ashe'ra, an ancient Semitic goddess, whose symbol was the phallus. In the Revised Version of the Old Testament this word is used to translate what in the ordinary version is translated 'grove,' as connected with the idolatrous practices into which the Jews were prone to fall.

Ash'es. See *Ash*.

Ash'ford, a thriving town of England, in Kent, situated near the confluence of the upper branches of the river Stour, with large locomotive and railway-carriage works. It gives name to a parl. div. of the county. Pop. 1891, 10,728.

Ashi'ra, a mountainous country of Western Equatorial Africa, to the south of the Ogowe river, the inhabitants of which are

said to be industrious, peaceable, and intelligent.

Ash'land, a town of the U. States, in the anthracite region of Pennsylvania. Pop. 1890, 7346.

Ashland, Ashland co., Wis., on Lake Superior, has rapidly increased in population; a prosperous town. Pop. 1890, 9956.

Ashley, LORD. See *Shaftesbury, First Earl of*.

Ash'mole, ELIAS, English antiquary, born 1617, died 1692. He became a chancery solicitor in London, but afterwards studied at Oxford, taking up mathematics, physics, chemistry, and particularly astrology. He published *Theatrum Chymicum* in 1652. On the Restoration he received the post of Windsor herald, and other appointments both honourable and lucrative. In 1672 appeared his *History of the Order of the Garter*. He presented to the University of Oxford his collection of rarities, to which he afterwards added his books and MSS., thereby commencing the Ashmolean Museum.

Ash'taroth, a goddess worshipped by the ancient Canaanites, and regarded as symbolizing the productive powers of nature, being probably the same as Astarte (which see). *Ashtaroth* is a plural form, the singular being *Ashtoreth*.

Ashton-in-Makerfield, a town of Lancashire, England, 4 miles from Wigan, with collieries, cotton-mills, &c. Pop. 13,379.

Ashton-under-Lyne, a municipal and parl. bor. of Lancashire, England (the parl. borough being partly in Cheshire), 6 miles east of Manchester, on the north bank of the river Tame, a well-built place, with handsome streets and public buildings. The chief employment is the cotton manufacture, but there are also collieries and iron-works, which employ a great many persons. Pop. of parl. bor., 47,322; of mun. bor., 40,494.

Ashtabula, O., town of Ashtabula county, 55 miles northeast of Cleveland; contains various manufactories. Pop. 8338.

Ash-Wednesday, the first day of Lent, so called from a custom in the Western Church of sprinkling ashes that day on the heads of penitents, then admitted to penance. The period at which the fast of Ash-Wednesday was instituted is uncertain. In the R. Catholic Church the ashes are now strewn on the heads of all the clergy and people present. In the Anglican Church Ash-Wednesday is regarded as an important fast day.

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Asia, the largest of the great divisions of the earth; length, from the extreme southwestern point of Arabia, at the strait of Babel-Mandeb, to the extreme north-eastern point of Siberia—East Cape, or Cape Vostochni, in Behring's Strait, 6900 miles; breadth, from Cape Chelyuskin, in Northern Siberia, to Cape Romania, the southern extremity of the Malay Peninsula, 5300 miles; area estimated at 17,296,000 square miles, about a third of all the land of the earth's surface. On three sides, N., E., and S., the ocean forms its natural boundary, while in the W. the frontier is marked mainly by the Ural Mountains, the Ural River, Caspian Sea, the Caucasus, the Black Sea, the Mediterranean, the Suez Canal, and the Red Sea. There is no proper separation between Asia and Europe, the latter being really a great peninsula of the former. Asia, though not so irregular in shape as Europe, is broken in the S. by three great peninsulas, Arabia, Hindustan, and Farther India, while the east coast presents peninsular projections and islands, forming a series of sheltered seas and bays, the principal peninsulas being Kamtchatka and Corea. The principal islands are those forming the Malay or Asiatic Archipelago, which stretch round in a wide curve on the S.E. of the continent. Besides the larger islands—Sumatra, Java, Borneo, Celebes, Mindanao, and Luzon (in the Philippine group)—there are countless smaller islands grouped round these. Other islands are Ceylon, in the S. of India; the Japanese islands and Sakhalin on the east of the continent; Formosa, S.E. of China; Cyprus, S. of Asia Minor; and New Siberia and Wrangell Land, in the Arctic Ocean.

The mountain systems of Asia are of great extent, and their culminating points are the highest in the world. The greatest of all is the Himálayan system, which lies mainly between lon. 70° and 100° E. and lat. 28° and 37° N. It extends, roughly speaking, from north-west to south-east, its total length being about 1500 miles, forming the northern barrier of Hindustan. The loftiest summits are Mount Everest, 29,002 feet high, another peak 28,265, and Kanchinjinga, 28,156. The principal passes, which rise to the height of 18,000 to 20,000 feet, are the highest in the world. A second great mountain system of Central Asia, connected with the north-western extremity of the Himálayan system by the elevated region of Pamir (about lon. 70° – 75° E., lat. 37° – 40° N.), is the Thian-Shan system, which runs north-eastward for a

distance of 1200 miles. In this direction the Altai, Sayan, and other ranges continue the line of elevations to the north-eastern coast. A north-western continuation of the Himálayas is the Hindu Kush, and farther westward a connection may be traced between the Himálayan mass and the Elburz range (18,460 ft.), south of the Caspian, and thence to the mountains of Kurdistan, Armenia, and Asia Minor.

There are vast plateaux and elevated valley regions connected with the great central mountain systems, but large portions of the continent are low and flat. Tibet forms the most elevated table-land in Asia, its mean height being estimated at 15,000 feet. On its south is the Himálayan range, while the Kuen-Lun range forms its northern barrier. Another great but much lower plateau is that which comprises Afghanistan, Beluchistan, and Persia, and which to the north-west joins into the plateau of Asia Minor. The principal plain of Asia is that of Siberia, which extends along the north of the continent and forms an immense alluvial tract sloping to the Arctic Ocean. Vast swamps or peat-mosses called *tundras* cover large portions of this region. South-west of Siberia, and stretching eastward from the Caspian, is a low-lying tract consisting to a great extent of steppes and deserts, and including in its area the Sea of Aral. In the east of China there is an alluvial plain of some 200,000 square miles in extent; in Hindustan are plains extending for 2000 miles along the south slope of the Himálayas; and between Arabia and Persia, watered by the Tigris and Euphrates, is the plain of Mesopotamia or Assyria, one of the richest in the world. Of the deserts of Asia the largest is that of Gobi (lon. 90° – 120° E., lat. 40° – 48° N.), large portions of which are covered with nothing but sand or display a surface of bare rock. An almost continuous desert region may also be traced from the desert of North Africa through Arabia (which is largely occupied by bare deserts), Persia, and Beluchistan to the Indus.

Some of the largest rivers of Asia flow northward to the Arctic Ocean—the Obi, the Yenisei, and the Lena. The Hoang-Ho and Yang-tse, and the Amoor, are the chief of those which flow into the Pacific. The Ganges, Brahmaputra, Irawaddy, and Indus empty into the Indian Ocean. The Persian Gulf receives the united waters of the Euphrates and the Tigris. There are

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several systems of inland drainage, large rivers falling into lakes which have no outlet.

The largest lake of Asia (partly also European) is the Caspian Sea, which receives the Kur from the Caucasus (with its tributary the Aras from Armenia), and the Sefid Rud and other streams from Persia (besides the Volga from European Russia, and the Ural, which is partly European, partly Asiatic). The Caspian lies in the centre of a great depression, being 83 feet below the level of the Sea of Azof. East from the Caspian is the Sea of Aral, which, like the Caspian, has no outlet, and is fed by the rivers Amoo Daria (Oxus) and Syr Daria. Still farther east, to the north of the Thian-Shan Mountains, and fed by the Ili and other streams, is Lake Balkash, also without an outlet and very salt. Other lakes having no communication with the ocean are Lob Nor, in the desert of Gobi, receiving the river Tarim, and the Dead Sea, far below the level of the Mediterranean, and fed by the Jordan. The chief freshwater lake is Lake Baikal, in the south of Siberia, between lon. 104° and 110° E., a mountain lake from which the Yenisei draws a portion of its waters.

Geologically speaking large areas of Asia are of comparatively recent date, the lowlands of Siberia, for instance, being submerged during the tertiary period, if not more recently. Many geologists believe that subsequently to the glacial period there was a great sea in Western Asia, of which the Caspian and Aral Seas are the remains. The desiccation of Central Asia is still going on, as is also probably the upheaval of a great part of the continent. The great mountain chains and elevated plateaux are of ancient origin, however, and in them granite and other crystalline rocks are largely represented. Active volcanoes are only met with in the extreme east (Kamtchatka) and in the Eastern Archipelago. From the remotest times Asia has been celebrated for its mineral wealth. In the Altai and Ural Mountains gold, iron, lead, and platinum are found; in India and other parts rubies, diamonds, and other gems are, or have been, procured; salt in Central Asia; coal in China, India, Central Asia, &c.; petroleum in the districts about the Caspian and in Burmah; bitumen in Syria; while silver, copper, sulphur, &c., are found in various parts.

Every variety of climate may be experienced in Asia, but as a whole it is marked

by extremes of heat and cold and by great dryness, this in particular being the case with vast regions in the centre of the continent and distant from the sea. The great lowland region of Siberia has a short but very hot summer, and a long but intensely cold winter, the rivers and their estuaries being fast bound with ice, and at a certain depth the soil is hard frozen all the year round. The northern part of China to the east of Central Asia has a temperate climate with a warm summer, and in the extreme north a severe winter. The districts lying to the south of the central region, comprising the Indian and Indo-Chinese peninsulas, Southern China, and the adjacent islands, present the characteristic climate and vegetation of the southern temperate and tropical regions modified by the effects of altitude. Some localities in South-eastern Asia have the heaviest rainfall anywhere known. As the equator is approached the extremes of temperature diminish till at the southern extremity of the continent they are such as may be experienced in any tropical country. Among climatic features are the monsoons of the Indian Ocean and the eastern seas, and the cyclones or typhoons, which are often very destructive.

The plants and animals of Northern and Western Asia generally resemble those of similar latitudes in Europe (which is really a prolongation of the Asiatic continent), differing more in species than in genera. The principal mountain trees are the pine, larch, and birch; the willow, alder, and poplar are found in lower grounds. In the central region European species reach as far as the Western and Central Himalayas, but are rare in the Eastern. They are here met by Chinese and Japanese forms. The lower slopes of the Himalayas are clothed almost exclusively with tropical forms. Higher up, between 4000 and 10,000 feet, are found all the types of trees and plants that belong to the temperate zone, there being extensive forests of conifers. Here is the native home of the deodar cedar. The south-eastern region, including India, the Eastern Peninsula, and China, with the islands, contains a vast variety of plants useful to man and having here their original habitat, such as the sugarcane, rice, cotton, and indigo, pepper, cinnamon, cassia, clove, nutmeg, and cardamoms, banana, cocoa-nut, areca and sago palms; the mango and many other fruits,

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with plants producing a vast number of drugs, caoutchouc and gutta-percha. The forests of India and the Malay Peninsula contain oak, teak, sâl, and other timber woods, besides bamboos, palms, sandalwood, &c. The palmyra palm is characteristic of Southern India; while the talipot palm flourishes on the western coast of Hindustan, Ceylon, and the Malay Peninsula. The cultivated plants of India and China include wheat, barley, rice, maize, millet, sorghum, tea, coffee, indigo, cotton, jute, opium, tobacco, &c. In North China and the Japanese Islands large numbers of deciduous trees occur, such as oaks, maples, limes, walnuts, poplars and willows, the genera being European, but the individual species Asiatic. Among cultivated plants are wheat, and in favourable situations rice, cotton, the vine, &c. Coffee, rice, maize, &c., are extensively grown in some of the islands of the Asiatic Archipelago. In Arabia and the warmer valleys of Persia, Afghanistan, and Beluchistan, aromatic shrubs are abundant. Over large parts of these regions the date-palm flourishes and affords a valuable article of food. Gum-producing acacias are, with the date-palm, the commonest trees in Arabia. African forms are found extending from the Sahara along the desert region of Asia.

Nearly all the mammals of Europe occur in Northern Asia, with numerous additions to the species. Central Asia is the native land of the horse, the ass, the ox, the sheep, and the goat. Both varieties of the camel, the single and the double humped, are Asiatic. To the inhabitants of Tibet and the higher plateaux of the Himalayas the yak is what the reindeer is to the tribes of the Siberian plain, almost their sole wealth and support. The elephant, of a different species from that of Africa, is a native of tropical Asia. The Asiatic lion, which inhabits Arabia, Persia, Asia Minor, Beluchistan, and some parts of India, is smaller than the African species. Bears are found in all parts, the white bear in the far north, and other species in the more temperate and tropical parts. The tiger is the most characteristic of the larger Asiatic Carnivora. It extends from Armenia across the entire continent, being absent, however, from the greater portion of Siberia and from the high table-land of Tibet; it extends also into Sumatra, Java, and Bali. In South-eastern Asia and the islands we find the rhinoceros, buffalo, ox, deer, squirrels,

porcupines, &c. In birds nearly every order is represented. Among the most interesting forms are the hornbills, the peacock, the Impey pheasant, the tragopan or horned pheasant, and other gallinaceous birds, the pheasant family being very characteristic of South-eastern Asia. It was from Asia that the common domestic fowl was introduced into Europe. The tropical parts of Asia abound in monkeys, of which the species are numerous. Some are tailed, others, such as the orang, are tailless, but none have prehensile tails like the American monkeys. In the Malay Archipelago marsupial animals, so characteristic of Australia, first occur in the Moluccas and Celebes, while various mammals common in the western part of the Archipelago are absent. A similar transition towards the Australian type takes place in the species of birds. (See *Wallace's Line*.) Of marine mammals the dugong is peculiar to the Indian Ocean; in the Ganges is found a peculiar species of dolphin. At the head of the reptiles stands the Gangetic crocodile, frequenting the Ganges and other large rivers. Among the serpents are the cobra da capello, one of the most deadly snakes in existence; there are also large boas and pythons besides sea and fresh-water snakes. The seas and rivers produce a great variety of fish. The Salmonidæ are found in the rivers flowing into the Arctic Ocean. Two rather remarkable fishes are the climbing perch and the archer-fish. The well-known goldfish is a native of China.

Asia is mainly peopled by races belonging to two great ethnographic types, the Caucasian or fair type, and the Mongolic or yellow. To the former belong the Aryan or Indo-European, and the Semitic races, both of which mainly inhabit the south-west of the continent; to the latter belong the Malays and Indo-Chinese in the s.e., as well as the Mongolians proper (Chinese, &c.), occupying nearly all the rest of the continent. To these may be added certain races of doubtful affinities, as the Dravidians of Southern India, the Cingalese of Ceylon, the Ainos of Yesso, and some negro-like tribes called Negritos, which inhabit Malacca and the interior of several of the islands of the Eastern Archipelago. The total population is estimated at about 800,000,000, or more than half that of the whole world. A large portion of Asia is under the dominion of European powers. Russia possesses the

whole of Northern Asia (Siberia) and a considerable portion of Central Asia, together with a great part of ancient Armenia, on the south of the Caucasus (pop. 16,000,000); Turkey holds Asia Minor, Syria and Palestine, part of Arabia, Mesopotamia, &c. (pop. 16,000,000); Great Britain rules over India, Ceylon, a part of the Indo-Chinese Peninsula (Upper and Lower Burmah), and several other possessions (pop. 290,000,000); France has acquired a considerable portion of the Indo-Chinese Peninsula, and has one or two other settlements (pop. 18,000,000); while to Holland belong Java, Sumatra, and other islands or parts of islands, and to Spain the Philippines. The chief independent states are the Chinese Empire (pop. 386,000,000), Japan (pop. 40,000,000), Siam (pop. 6,000,000), Afghanistan (5,000,000), Beluchistan, Persia (pop. 7,000,000), and the Arabian states (3,000,000). The most important of the religions of Asia are the Brahmanism of India, the creeds of Buddha, Confucius, and Lao-tse in China, and the various forms of Mohammedanism in Arabia, Persia, India, &c. Probably more than a half of the whole population profess some form of Buddhism. Several native Christian sects are found in India, Armenia, Kurdistan, and Syria.

Asia is generally regarded as the cradle of the human race. It possesses the oldest historical documents, and next to the immediately contiguous kingdom of Egypt the oldest historical monuments in the world. The Old Testament contains the oldest historical records which we have of any nation in the form of distinct narrative. The period at which Moses wrote was probably 1500 or 1600 years before the Christian era. His and the later Jewish writings confine themselves almost exclusively to the history of the Hebrews; but in Babylonia, as in Egypt, civilization had made great advances long before this time. The earliest seat of the Aryan race was probably on the banks of the Oxus. Hence, perhaps from the pressure of the Mongolian tribes to the north, they spread themselves to the south-east and south-west, finally occupying Northern India, Persia, and other parts of Western Asia, and spreading into Europe, perhaps about 2000-1500 B.C. In China authentic history extends back probably to about 1000 B.C., with a long preceding period of which the names of dynasties are preserved without chronologi-

cal arrangement. The kingdoms of Assyria, Babylonia, Media, and Persia, alternately predominated in South-western Asia. In regard to the history of these monarchies much light has been obtained from the decipherment of the cuneiform inscriptions. The arms of the Pharaohs extended into Asia, but their conquests there were short-lived. From Cyrus (B.C. 559), who extended the empire of Persia from the Indus to the Mediterranean, while his son, Cambyses, added Egypt and Lybia to it, to the conquest of Alexander (B.C. 330), Persia was the dominant power in Western Asia. Alexander's great empire became broken up into separate kingdoms, which were finally absorbed in the Roman Empire, and this ultimately extended to the Tigris. Soon after the most civilized portions of the three continents had been reduced under one empire the great event took place which forms the dividing line of history, the birth of Christ and the spread of Christianity. In A.D. 226 a protracted struggle began between the newer Persian empire and the Romans, which lasted till the advent of Mohammed, and the conquests of the Arabians. Persia was the first great conquest of Mohammed's followers. Syria and Egypt soon fell before their arms, and within forty years of the celebrated flight of Mohammed from Mecca (the *Hejra*), the sixth of the caliphs, or successors of the Prophet, was the most powerful sovereign of Asia. The Mongols next became the dominant race. In 999 Mahmud, whose father, born a Turk slave, became governor of Ghazni, conquered India and established his rule. The dynasty of the Seljuk Tatars was established in Aleppo, Damascus, Iconium, and Kharism, and was distinguished for its struggles with the Crusaders. Othman, an emir of the Seljuk sultan of Iconium, established the Ottoman Empire in 1300. About 1220 Genghis Khan, an independent Mongol chief, made himself master of Central Asia, conquered Northern China, overran Turkestan, Afghanistan, and Persia; his successors took Bagdad and extinguished the caliphate. In Asia Minor they overthrew the Seljuk dynasty. One of them, Timur or Tamerlane, carried fire and sword over Northern India and Western Asia, defeated and took prisoner Bajazet, the descendant of Othman (1402), and received tribute from the Greek emperor. The Ottoman Empire soon recovered from the blow inflicted by Timur, and Constantinople was taken and the Eastern Empire finally overthrown by the

Sultan Mohammed II. in 1453. China recovered its independence about 1368 and was again subjected by the Manchu Tatars (1618-45), soon after which it began to extend its empire over Central Asia. Siberia was conquered by the Cossacks on behalf of Russia (1580-84). The same country effected a settlement in the Caucasus about 1786, and has since continued to make steady advances into Central Asia. The discovery by the Portuguese of the passage to India by the Cape of Good Hope led to their establishment on the coast of the peninsula (1498). They were speedily followed by the Spanish, Dutch, French, and British. The struggle between the two last powers for the supremacy of India was completed by the destruction of the French settlements (1760-65). France has recently acquired an extensive territory in Farther India. At present the forms of government in Asia range from the primitive rule of the nomad sheik to the despotism of China. India has been brought by Britain directly under European influence, and Japan is freely modelling her institutions on those of the West.

Asia, CENTRAL, a designation loosely given to the regions in the centre of Asia east of the Caspian, also called Turkestan, and formerly Tartary. The eastern portion belongs to China, the western now to Russia. Russian Central Asia comprises the Kirghiz Steppe (Uralsk, Turgai, Akmolinsk, Semipalatinsk, &c.), and what is now the government-general of Turkestan, besides the territory of the Turkomans, or Transcaspia and Merv. Russia has thus absorbed the old khanate of Khokand and part of Bokhara and Khiva, and controls the vassal territories of Bokhara and Khiva, the southern boundary being the Persian and Afghan frontiers.

Asia Minor, the most westerly portion of Asia, being the peninsula lying west of the Upper Euphrates, and forming part of Asiatic Turkey. It forms an extensive plateau, with lofty mountains rising above it, the most extensive ranges being the Taurus and Anti-Taurus, which border it on the south and south-east, and rise to over 10,000 feet. There are numerous salt and fresh-water lakes. The chief rivers are the Kizil-Irmak (Halys), Sakaria (Sangarius), entering the Black Sea; and the Sarabat (Hermus) and Menderes (Mæander), entering the Ægean. The coast regions are generally fertile, and have a genial climate; the

interior is largely arid and dreary. Valuable forests and fruit-trees abound. Smyrna is the chief town. *Anatolia* is an equivalent name.

Asiatic Societies, learned bodies instituted for the purpose of collecting information respecting the different countries of Asia, such as the Asiatic Society of Bengal, founded in 1784 by Sir William Jones; and the Royal Asiatic Society of Great Britain and Ireland, established by Mr. Colebrooke, and opened in 1823. There are similar societies on the European Continent and in America, such as the Société Asiatique at Paris, founded in 1822; the Oriental Society of Germany (Deutsche Morgenländische Gesellschaft), founded in 1845; and the Oriental Society at Boston, founded in 1842.

Asiphona'ta, or ASIPHON'IDA, an order of lamellibranchiate, bivalve molluscs, destitute of the siphon or tube through which, in the Siphonata, the water that enters the gills is passed outwards. It includes the oysters, the scallop-shells, the pearl-oyster, the mussels, and in general the most useful and valuable molluscs.

Askabad', the administrative centre of the Russian province of Transcaspia, situated in the Akhal Tekke oasis, and occupied by Skobelev in Jan. 1881, after the sack of Geok Tepé. Its distance from Merv is 232 miles, from Herat 388 miles.

As'kew, ANNE, a victim of religious persecution; born 1521, martyred 1546. She was a daughter of Sir William Askew of Lincolnshire, and was married to a wealthy neighbour named Kyme, who, irritated by her Protestantism, drove her from his house. In London, whither she went probably to procure a divorce, she spoke against the dogmas of the old faith, and being tried was condemned to death as a heretic. Being put to the rack to extort a confession concerning those with whom she corresponded, she continued firm, and was then taken to Smithfield, chained to a stake, and burned.

Askja (ask'yä), a volcano near the centre of Iceland, first brought into notice by an eruption in 1875. Its crater is 17 miles in circumference, surrounded by a mountain-ring from 500 to 1000 feet high, the height of the mountain itself being between 4000 and 5000 feet.

As'mannshausen (-hou-zn), a Prussian village on the Rhine, in the district of Wiesbaden, celebrated for its wine. Many judges prefer the red wine of Asmanns-

hausen to the best Burgundy, but it retains its merits for three or four years only.

Asmo'dai, or ASMO'DEUS, an evil spirit, who, as related in the book of Tobit, slew seven husbands of Sara, daughter of Ragnel, but was driven away into the uttermost parts of Egypt by the young Tobias under the direction of the angel Raphael. Asmodai signifies a desolater, a destroying angel. He is represented in the Talmud as the prince of demons who drove King Solomon from his kingdom.

Asmonæ'ans, a family of high-priests and princes who ruled over the Jews for about 130 years, from 153 B.C., when Jonathan, son of Mattathias, the great-grandson of Chasmon or Asmonæus, was nominated to the high-priesthood.

Asnières (än-yār), a town on the Seine, of from 6000 to 7000 inhabitants, a favourite boating resort with the Parisians.

Aso'ka, an Indian sovereign, who reigned 255–223 B.C. over the whole of Northern Hindustan, grandson of Chandragupta or Sandracottus. He embraced Buddhism, and forced his subjects also to become converts. Many temples and topes still remaining are attributed to him.

Aso'ka (*Jonesia asōca*), an Indian tree, nat. order Leguminosæ, having a lovely flower, showing orange, scarlet, and bright yellow tints; sacred to the god Siva, and often mentioned in Indian literature.

Aso'pus, the name of several rivers in Greece, of which the most celebrated is in Bœotia.

Asp, ASPIC (*Naja*, or *Vipera haje*), a species of viper found in Egypt, resembling the cobra da capello or spectacle-serpent of the East Indies, and having a very venomous bite. When approached or disturbed it elevates its head and body, swells out its neck, and appears to stand erect to attack the aggressor. Hence the ancient Egyptians believed that the asps were guardians of the spots they inhabited, and the figure of this reptile was adopted as an emblem of the protecting genius of the world. The balancing motions made by it in the endeavour to maintain the erect attitude have led to the employment of the asp as a dancing serpent by the African jugglers. The 'deaf



Asp, from ancient Egyptian monument.

adder that stoppeth her ear' of Psalm lviii. 4, 5 is translated asp in the margin, and seems to have been this species. Cleopatra is said to have committed suicide by means of an asp's bite, but the incident is generally associated with the Cerastes or horned viper, not with the haje. The name asp is also given to a viper (*Vipera aspis*) common on the continent of Europe.

Aspar'agus (*Asparāgus officinālis*), a plant of the order Liliaceæ, the young shoots of which, cut as they are emerging from the ground, are a favourite culinary vegetable. In Greece, and especially in the southern steppes of Russia and Poland, it is found in profusion; and its edible qualities were esteemed by the ancients. It is mostly boiled and served without admixture, and eaten with butter and salt. It is usually raised from seed; and the plants should remain three years in the ground before they are cut; after which, for ten or twelve years, they will continue to afford a regular annual supply. The beds are protected by straw or litter in winter. Its diuretic properties are ascribed to the presence of a crystalline substance found also in the potato, lettuce, &c.

Aspa'sia, a celebrated lady of ancient Greece, was born at Miletus, in Ionia, but passed a great part of her life at Athens, where her house was the general resort of the most distinguished men in Greece. She won the affection of Pericles, who united himself to Aspasia as closely as was permitted by the Athenian law, which declared marriage with a foreign woman illegal. Her power in the state has often been exaggerated, but it is beyond question that her genius left its mark upon the administration of Pericles. In 432–1 B.C. she was accused of impiety, and was only saved from condemnation by the eloquence and tears of Pericles. After his death (B.C. 429) Aspasia is said to have attached herself to a wealthy but obscure cattle-dealer of the name of Lysicles, whom she raised to a position of influence in Athens. Nothing more is known of her life. She had a son by Pericles, who was legitimated (B.C. 430) by a special decree of the people.

As'pe, a town of southern Spain, prov. of Alicante. Pop. 7476.

As'pect, in astrology, denotes the situation of the planets with respect to each other. There are five different aspects: the sextile, when the planets are 60° distant; quartile, when they are 90° distant; trine, when

120° distant; opposition, when 180° distant; and conjunction, when both are in the same degree. The aspects were classed by astrologers as *benign*, *malignant*, or *indifferent*.

As'pen, or trembling poplar (*Populus tremula*), a species of poplar indigenous to Britain and to most mountainous regions throughout Europe and Asia. It is a beautiful tree of rapid growth and extremely hardy, with nearly circular toothed leaves, smooth on both sides, and attached to footstalks so long and slender as to be shaken by the slightest wind; wood light, porous, soft, and of a white colour, useful for various purposes.

Aspen, town of Gunnison co., Col., centre of a mining district. Population in 1890, 5108.

Aspergill'us, the brush used in R. Catholic churches for sprinkling holy water on the people. It is said to have been originally made of hyssop.

As'pern and **Esslingen** (or **ESSLING**) (es'-ling-en), two villages east of Vienna, and on the opposite bank of the Danube; celebrated as the chief contested positions in the bloody but undecisive battle fought between the Archduke Charles and Napoleon I., May 21 and 22, 1809, when it was estimated that the Austrians lost a third of their army, and the French no less than half.

Asper'ula, the woodruff genus of plants.

Asphalt, **Asphal'tum**, the most common variety of bitumen; also called mineral pitch. Asphalt is a compact, glossy, brittle, black or brown mineral, which breaks with a polished fracture, melts easily with a strong pitchy odour when heated, and when pure burns without leaving any ashes. It is found in the earth in many parts of Asia, Europe, and America, and in a soft or liquid state on the surface of the Dead Sea, which from this circumstance was called *Asphaltites*. It is of organic origin, the asphalt of the great Pitch Lake of Trinidad being derived from bituminous shales, containing vegetable remains in the process of transformation. Asphalt is produced artificially in making coal-gas. During the process much tarry matter is evolved and collected in retorts. If this be distilled, naphtha and other volatile matters escape, and asphalt is left behind. In the U. S. in 1889 the value of the product was \$171,537.

Asphalte (or **ASPHALT**) **Rock**, a limestone impregnated with bitumen, found in large quantities in various localities in

Europe, as in the Val de Travers, Neuchâtel, Switzerland; in the department of Ain in France; in Alsace, Hanover, Holstein, Sicily, &c. These rocks contain a variable quantity of bitumen (from 7 or 8 to 20 or 30 per cent) naturally diffused through them. The Val de Travers asphalt was discovered in 1710. Since then other asphalte-rocks, as well as artificial preparations made by mixing bitumen, gas-tar, pitch, or other materials, with sand, chalk, &c., have been brought into competition with it. From 1880 to 1890, inclusive, there were 6,803,054 square yards of Trinidad asphalt paving laid in the United States.

As'phodel (*Asphodelus*), a genus of plants, order Liliaceæ, consisting of perennials, with fasciculated fleshy roots, flowers arranged in racemes, six stamens inserted at the base of the perianth, a sessile almost spherical ovary with two cells, each containing two ovules; fruit a capsule with three cells, in each of which there are, as a rule, two seeds. They are fine garden-plants, native of Southern Europe. The king's spear, *A. luteus*, has yellow flowers, blossoming in June. *Asphodelus ramosus*, which attains a height of 5 feet, is cultivated in Algeria and elsewhere, its tubercles yielding a very pure alcohol, and the residue, together with the stalks and leaves, being used in making pasteboard and paper. The asphodel was a favourite plant among the ancients, who were in the habit of planting it round their tombs.

Asphyx'ia, literally, the state of a living animal in which no pulsation can be perceived, but the term is more particularly applied to a suspension of the vital functions from causes hindering respiration. The normal accompaniments of death from asphyxia are dark fluid blood, a congested brain and exceedingly congested lungs, the general engorgement of the viscera, and an absence of blood from the left cavities of the heart while the right cavities and pulmonary artery are gorged. The restoration of asphyxiated persons has been successfully accomplished at long periods after apparent death. The attempt should be made to maintain the heat of the body and to secure the inflation of the lungs as in the case of the apparently drowned.

Aspic, a dish consisting of a clear savoury meat jelly, containing fowl, game, fish, &c.

Aspid'ium, a genus of ferns, nat. order Polypodiaceæ, comprising the shield-fern and male-fern.

As'pinwall. See *Colon*.

As'pirate, a name given to any sound like our *h*, to the letter *h* itself, or to any mark of aspiration, as the Greek *spiritus asper*, or rough breathing ('). Such characters or sounds as the Sanskrit *kh*, *gh*, *bh*, and the Gr. *ch*, *th*, *ph*, are called *aspirates*.

As'pirator, an instrument used to promote the flow of a gas from one vessel into another by means of a liquid. The simplest form of aspirator is a cylindrical vessel containing water, with a pipe at the upper end which communicates with the vessel containing the gas, and a pipe at the lower end also, with a stop-cock and with its extremity bent up. By allowing a portion of the water to run off by the pipe at the lower part of the aspirator a measured quantity of air or other gas is sucked into the upper part.

Asple'nium, a genus of ferns, of the natural order Polypodiaceæ. Several are natives of the United States. The dwarf spleen-wort is a very beautiful little fern.

Aspromon'te, a mountain of Italy in the south-west of Calabria, where Garibaldi was wounded and taken prisoner with greater part of his army, in August, 1862.

Aspropot'amo. See *Achelous*.

As'rael, the Mohammedan angel of death, who takes the soul from the body.

Ass (*Equus asinus*), a species of the horse genus, supposed by Darwin to have sprung from the wild variety (*Asinus tæniopus*) found in Abyssinia; by some writers to be a descendant of the *onager* or wild ass, inhabiting the mountainous deserts of Tartary, &c.; and by others to have descended from the kiang or djiggetai (*A. hemionus*) of south-western Asia. Both in colour and size the ass is exceedingly variable, ranging from dark gray and reddish brown to white, and from the size of a Newfoundland dog in North India to that of a good-sized horse. In the south-western countries of Asia and in Egypt, in some districts of Southern Europe, as in Spain, and in Kentucky and Peru, great attention has been paid to selection and interbreeding, with a result no less remarkable than in the case of the horse. Thus in Syria there appear to be four distinct breeds: a light and graceful animal used by ladies, an Arab breed reserved for the saddle, an ass of heavier build in use for ploughing and draft purposes, and the large Damascus breed. The efforts made to raise the deteriorated British breed have only been partially successful. The male

ass is mature at two years of age, the female still earlier. The she-ass carries her young eleven months. The teeth of the young ass follow the same order of appearance and renewal as those of the horse. The life of the ass does not usually exceed thirty years. It is in general much healthier than the horse, and is maintained in this condition by a smaller quantity and coarser quality of food; it is superior to the horse in its ability to carry heavy burdens over the most precipitous roads, and is in no respect its inferior in intelligence, despite the reputation for stupidity which it has borne from very ancient times. The skin is used as parchment to cover drums, &c., and in the East is made into shagreen. The hybrid offspring of the horse and the female ass is the hinny, that of the ass and the mare is the mule; but the latter is by far the larger and more useful animal. Asses' milk, long celebrated for its sanative qualities, more closely resembles that of a woman than any other. It is very similar in taste, and throws up an equally fluid cream, which is not convertible into butter.

Assab', a bay in Africa, studded with islands, on the south-west coast of the Red Sea. Here is an Italian station and settlement declared a colony and free port by Italy on January 9th, 1881.

Assafoetida. See *Asafetida*.

Assai-palm (as-i; *Euterpe oleracæa*), a native of tropical S. America, only about 4 inches in diameter and 60 or 80 feet high, with a crown of leaves, beneath which a small fruit grows on branched horizontal spadices. The pulp of the fruit mixed with water is used as a beverage.

Assal', a salt lake in north-eastern Africa, in Adal.

Assam', a chief commissionership or province of British India, on the north-east border of Bengal, bounded on the north by the Himalayas, on the east and south mainly by Burmah; area, 49,004 square miles. It forms a series of fertile valleys watered by the Brahmaputra and its tributaries, the valley of the Brahmaputra, which is the main one, consisting of rich alluvial plains, either but little elevated above the river, or so low that large extents of them are flooded for three or four days once or twice in the year, while the course of the river often changes. The climate is marked by great humidity, and malarious diseases are common in the low grounds; otherwise it is not unhealthy. The whole province, except

the cultivated area, may be designated as forest, the trees including teak, sâl, sissoo, the date and sago palm, the areca palm (the betel-nut tree), the Indian fig-tree, &c. The article of most commercial importance is tea, which was first exported in 1838, and the



Assamese Gossains, or Land-owners.

yield of which is now over 60,000,000 lbs. annually. Other crops raised are rice, Indian corn, pulse, oil-seeds, sugar-cane, hemp, jute, potatoes, &c. In the jungles and forests roam herds of elephants, the rhinoceros, tiger, buffalo, leopard, bear, wild hog, jackal, fox, goat, and various kinds of deer. Among serpents are the python, and the cobra. Pheasants, partridges, snipe, wild peacock, and many kinds of water-fowl abound. Coal (which is begun to be worked), petroleum, and limestone are found in abundance, iron is smelted to a small extent, gold-dust is met with, lime is exported to Bengal. There is no single Assamese nationality, and the Assamese language is merely a modern dialect of Bengali. Pop. 1891, 5,476,833; 2,997,072 of whom are Hindus, 1,483,974 Mohammedans, 16,844 Christians; the remainder are the hill tribes who profess aboriginal faiths. The labourers in the tea-gardens are mostly drawn from Bengal. In 1826 Assam became a possession of Britain, being taken from the Burmese, who had made themselves masters of it about the end of the eighteenth century. The largest town is Sylhet (pop. 14,000).

As'sapan (*Sciuropterus volucella*), the flying-squirrel of N. America, an elegant little animal with folds of skin along its sides

which enable it to take leaps of 40 or 50 yards.

Assass'ins, an Asiatic order or society having the practice of assassination as its most distinctive feature, founded by Hassan Ben Sabbah, a *dai* or missionary of the heterodox Mohammedan sect the Ismaelites. The society grew rapidly in numbers, and in 1090 the Persian fortress of Alamut fell into their hands. Other territories were added, and the order became a recognized military power. Its organization comprised seven ranks, at its head being the Sheikh-al-Jebal or 'Old man of the mountains.' Upon a select band fell the work of assassination, to which they were stimulated by the intoxicating influence of *hashish*. From the epithet *Hashishim* (hemp-eaters) which was applied to the order, the European word *assassin* has been derived. For nearly two centuries they maintained their power under nine sheiks. Hassan, after a long and prosperous reign, died in 1124. Most of his successors died violent deaths at the hands of relatives or dependents. After proving themselves strong enough to withstand the powerful sultans Nouredin and Saladin, and making themselves feared by the Crusaders, the *Assassins* were overcome by the Tatar leader Hulaku. The last chief, Rokneddin, was killed for an act of treachery subsequent to his capture, and his death was followed by a general massacre of the assassins, in which 12,000 perished. Dispersed bands led a roving life in the Syrian mountains, and it is alleged that in the Druses and other small existing tribes their descendants are still to be found.

Assault', in law, an attempt or offer, with force and violence, to do a corporal hurt to another, as by striking at him with or without a weapon. If a person lift up or stretch forth his arm and offer to strike another, or menace any one with any staff or weapon, it is an assault in law. Assault, therefore, does not necessarily imply a hitting or blow, because in trespass for assault and battery a man may be found guilty of the assault and acquitted of the battery. But every battery includes an assault.

Assaye, ASSYE (as-si'), a village in Southern India, in Hyderabad, where Wellington (then Major-general Wellesley) gained a famous victory in 1803. With only 4500 troops at his disposal he completely routed the Mahratta force of 50,000 men and 100 guns. The victory, however, cost him more than a third of his men.

Assaying, the estimation of the amount of pure metal, and especially of the precious metals, in an ore or alloy. In the case of silver the assay is either by the dry or by the wet process. The dry process is called *cupellation* from the use of a small and very porous cup, called a *cupel*, formed of well-burned and finely-ground bone-ash made into a paste with water. The cupel, being thoroughly dried, is placed in a fire-clay oven about the size of a drain-tile, with a flat sole and arched roof, and with slits at the sides to admit air. This oven, called a *muffle*, is set in a furnace, and when it is at a red heat the assay, consisting of a small weighed portion of the alloy wrapped in sheet-lead, is laid upon the cupel. The heat causes the lead to volatilize or combine with the other metals, and to sink with them into the cupel, leaving a bright globule of pure metallic silver, which gives the amount of silver in the alloy operated on. In the wet process the alloy is dissolved in nitric acid, and to the solution are added measured quantities of a solution of common salt of known strength, which precipitates chloride of silver. The operation is concluded when no further precipitate is obtained on the addition of the salt solution, and the quantity of silver is calculated from the amount of salt solution used. An alloy of gold is first cupelled with lead as above, with the addition of three parts of silver for every one of gold. After the cupellation is finished the alloy of gold and silver is beaten and rolled out into a thin plate, which is curled up by the fingers into a little spiral or *cornet*. This is put into a flask with nitric acid, which dissolves away the silver and leaves the cornet dark and brittle. After washing with water the cornet is boiled with stronger nitric acid to remove the last traces of silver, well washed, and then allowed to drop into a small crucible, in which it is heated, and then it is weighed. The assay of gold, therefore, consists of two parts: *cupellation*, by which inferior metals (except silver) are removed; and *quartation*, by which the added silver and any silver originally present are got rid of. The quantity of silver added has to be regulated to about three times that of the gold. If it be more the cornet breaks up, if it be less the gold protects small quantities of the silver from the action of the acid. Where, as in some gold manufactured articles, these methods of assay cannot be applied, a streak is drawn with the article upon a *touchstone* consisting

of coarse-grained Lydian quartz saturated with bituminous matter, or of black basalt. The practised assayer will detect approximately the richness of the gold from the colour of the streak, which may be further subjected to an acid test. The Goldsmith's Company of London is the statutory assay-master of all England.

As'segai, a spear used as a weapon among the Kaffres of S. Africa, made of hard wood tipped with iron, and used for throwing or thrusting.

Assembly, GENERAL, the supreme ecclesiastical court of the Established Church of Scotland, consisting of delegates from every presbytery, university, and royal burgh in Scotland. It has the countenance of a representative of the queen, styled the lord high commissioner, who is always a nobleman. It holds its meetings annually and (according to the present practice) in the month of May, usually sitting for ten or twelve days. In its judicial capacity as a court of review, and as the court of last resort, the General Assembly has a right to determine finally every question brought from the inferior courts, by reference, complaint, or appeal. It possesses besides a general superintendence of the discipline of the church, of the management of the inferior courts, of the conduct of the clergy, and of the morals of the people. In its legislative capacity it has the power of enacting statutes with regard to every subject of ecclesiastical cognizance; which are binding on the Assembly itself, on the inferior courts, and on the individual members of the church. But by an act of Assembly in 1697, from its substance and design named the Barrier Act, every proposition for a new law must first be considered in the form of an overture; and though it should be approved of by the Assembly it cannot be enacted as a statute till it has been first transmitted to the several presbyteries of the church for their consideration, and has received the sanction of at least a majority of the presbyteries. The Free Church of Scotland has also a General Assembly similar in its constitution and functions to that of the Established Church, and the same is the case with the Presbyterian churches of Ireland and America.

Assembly, NATIONAL (France), a body set up in France on the eve of the revolution. Upon the convocation of the States-general by Louis XVI. the privileged nobles and clergy refused to deliberate in the same

chamber with the commons or *tiers-état* (third estate). The latter, therefore, on the proposition of the Abbé Siéyès, constituted themselves an *assemblée nationale*, with legislative powers (June 17, 1789). They bound themselves by oath not to separate until they had furnished France with a constitution, and the court was compelled to give its assent. In the 3250 decrees passed by the assembly were laid the foundations of a new epoch, and having accomplished this task it dissolved itself, Sept. 30, 1791.

Assembly of Divines. See *Westminster Assembly*.

As'sen, chief town of the province of Drenthe, Holland. Pop. 7932.

Assent', THE ROYAL, is the approbation given by the sovereign in Parliament to a bill which has passed both houses, after which it becomes a law. It may either be done in person, when the sovereign comes to the House of Peers and the assent (in Norman French) is declared by the clerk of parliament; or it may be done by letters-patent under the great seal, signed by the sovereign.

As'ser, JOHN, a learned British ecclesiastic, originally a monk of St. David's, distinguished as the instructor, companion, and biographer of Alfred the Great, who appointed him abbot of two or three different monasteries, and finally Bishop of Sherborne, where he died in 908 or 910. His life of Alfred, written in Latin (*Annales Rerum Gestarum Ælfredi Magni*), is of very great value, though its authenticity has been questioned. There is an English translation in Bohn's Antiquarian Library.

Assess'ment, the act of determining the value of a man's property or occupation for the purpose of levying a tax.—The sum assessed or levied; a tax; a rate.—*An assessment of damages* is the fixing of the amount of damages to which the prevailing party in a suit is entitled.

Asses'sor, a person appointed to ascertain and fix the amount of taxes, rates, &c., and to make assessments. The "assessors of taxes," so named in the United States, are commonly termed "surveyors" in England.

As'sets (French, *assez*, enough), property or goods available for the payment of a bankrupt or deceased person's obligations. Assets are personal or real, the former comprising all goods, chattels, &c., devolving upon the executor as saleable to discharge debts and legacies. In commerce and bank-

ruptcy the term is often used as the antithesis of 'liabilities,' to designate the stock in trade and entire property of an individual or an association.

Asside'ans, CHASIDE'ANS, or CHASIDIM, one of the two great sects into which, after the Babylonish captivity, the Jews were divided with regard to the observance of the law—the Chasidim accepting it in its later developments, the Zadikim professing adherence only to the law as given by Moses. From the Chasidim sprang the Pharisees, Talmudists, Rabbinites, Cabbalists, &c.

Assien'to, the permission of the Spanish government to a foreign nation to import negro slaves from Africa into the Spanish colonies in America, for a limited time, on payment of certain duties. It was accorded to the Netherlands about 1552, to the Genoese in 1580, and to the French Guinea Company (afterwards the Assiento Company) in 1702. In 1713 the celebrated *assiento treaty* with Britain for thirty years was concluded at Utrecht. By this contract the British obtained the right to send yearly a ship of 500 tons, with all sorts of merchandise, to the Spanish colonies. This led to frequent abuses and contraband trade; acts of violence followed, and in 1739 a war broke out between the two powers. At the peace of Aix-la-Chapelle, in 1748, four years more were granted to the British; but in the Treaty of Madrid, two years later, £100,000 sterling were promised for the relinquishment of the two remaining years, and the contract was annulled.

Assignats (äs-ē-nyà), the name of the national paper currency in the time of the French revolution. Assignats to the value of four hundred million francs were first struck off by the Constituent Assembly, with the approbation of the king, April 19, 1790, to be redeemed with the proceeds of the sale of the confiscated goods of the church. August 27th of the same year, Mirabeau urged the issuing of 2,000,000,000 francs of new assignats, which caused a dispute in the assembly. Vergasse and Dupont, who saw that the plan was an invention of Clavière for his own enrichment, particularly distinguished themselves as the opponents of the scheme. Mirabeau's exertions, however, were seconded by Péthion, and 800,000,000 francs more were issued. They were increased by degrees to 45,578,000,000, and their value rapidly declined. In the winter of 1792-93 they lost 30 per cent,

and in spite of the law to compel their acceptance at their nominal value they continued to fall till in the spring of 1796 they had sunk to one three hundred and forty-fourth their nominal value. This depreciation was due partly to the want of confidence in the stability of the government, partly to the fact that the coarsely-executed and easily counterfeited assignats were forged in great numbers. They were withdrawn by the Directory from the currency, and at length redeemed by mandates at one-thirtieth of their nominal value.

Assignee, a person appointed by another to transact some business, or exercise some particular privilege or power. Formerly the persons appointed under a commission of bankruptcy, to manage the estate of the bankrupt on behalf of the creditors, were so called, but now *trustees*, or *receivers*.

Assign'ment is a transfer by deed of any property, or right, title, or interest in property, real or personal. Every demand connected with a right of property is assignable.

Assiniboi'a, the smallest of the four districts into which a portion of the north-western territories of Canada was divided in 1882. It lies immediately to the west of Manitoba, with Saskatchewan and Alberta as its northern and western boundaries. It is intersected by the Saskatchewan (South Branch) and the Qu'Appelle River, and contains much good wheat land. Some coal is raised. Area, 89,535 sq. miles. Pop. 1891, 30,374. Capital, Regina, on the Canadian Pacific Railway, which intersects the district.

Assiniboine, a river of Canada, which flows through Manitoba and joins the Red River at Winnipeg, about 40 miles above the entrance of the latter into Lake Winnipeg, after a somewhat circuitous course of about 500 miles from the west and north-west. Steamers ply on it for over 300 miles.

Assisi (ás-sē'sē), a small town in Italy, in the province of Umbria, 20 miles north of Spoleto, the see of a bishop, and famous as the birthplace of St. Francis d'Assisi. The splendid church built over the chapel where the saint received his first impulse to devotion, is one of the finest remains of medieval Gothic architecture.

Assi'zes, a term chiefly used in England to signify the sessions of the courts held at Westminster prior to Magna Charta, but thereafter appointed by successive enactments to be held annually in every county.

Twelve judges, who are members of the highest courts in England, twice in every year perform a *circuit* into all the counties into which the kingdom is divided (the counties being grouped into seven circuits), to hold these assizes, at which both civil and criminal cases are decided. Occasionally this circuit is performed a third time for the purpose of jail-delivery. In London and Middlesex, instead of circuits, courts of *nisi prius* are held. At the assizes all the justices of the peace of the county are bound to attend. Special commissions of assize are granted for inquest into certain causes.

Among the more important historic uses of the term *assize* are its application to any sitting or deliberative council, and its transference thence to their ordinances, decrees, or assessments. In the latter sense we have the Assizes of Jerusalem, a code of feudal laws formulated in 1099 under Godfrey of Bouillon; the Assizes of Clarendon (1166), of Northampton (1176), and of Woodstock (1184); also the *assise venalium* (1203), for regulating the prices of articles of common consumption; the Assize of Arms (1181), an ordinance for organizing the national militia, &c.

Associated Press, a combination of daily newspapers, formed in New York in 1850, for the procuring of news by telegraph, or otherwise. East of the Allegheny mountains it is (1893) being gradually absorbed by the UNITED PRESS; in the West and South 350 papers still adhere to it.

Association, a society or body of persons joined together for the support or furtherance of some object.

Association of Ideas, the term used in psychology to comprise the conditions under which one idea is able to recall another to consciousness. Recently some psychologists have been disposed to classify these conditions under two general heads: the law of contiguity, and the law of association. The first states the fact that actions, sensations, emotions, and ideas, which have occurred together, or in close succession, tend to suggest each other when any one of them is afterwards presented to the mind. The second indicates that present actions, sensations, emotions, or ideas tend to recall their like from among previous experiences. Other laws have at times been enunciated, but they are reducible to these; thus, the 'law of contrast or contrariety' is properly a case of contiguity. On their physical side the principles of association correspond with

the physiological facts of re-excitation of the same nervous centres, and in this respect they have played an important part in the endeavour to place psychology upon a basis of positive science. The laws of association, taken in connection with the law of relativity, are held by many to be a complete exposition of the phenomena of intellect.

Ass'onance, in poetry, a term used when the terminating words of lines have the same vowel-sound but make no proper rhyme. Such verses, having what we should consider false rhymes, are regularly employed in Spanish poetry; but cases are not wanting in leading British poets. Mrs. Browning not only used them frequently, but justified the use of them.

Assouan (às-sö-àn'), or **ESSOUAN** (*Syēnē*), a town of Upper Egypt, on the east bank of the Nile, below the first cataract. The granite quarries of the Pharaohs, from which were procured the stones for the great obelisks and colossal statues of ancient times, are in the neighbourhood. Pop. about 6000; trade in dates, senna, &c.

Assump'sit, in common law, an action to recover compensation for the non-performance of a *parole* promise; that is, a promise not contained in a deed under seal. Assumpsits are of two kinds, *express* and *implied*. The former are where the contracts are actually made in word or writing; the latter are such as the law implies from the justice of the case; *e.g.* employment to do work implies a promise to pay.

Assumption, the ecclesiastical festival celebrating the miraculous ascent into heaven of the Virgin Mary's body as well as her soul, kept on the 15th of August. The legend first appeared in the third or fourth century, and the festival was instituted some three centuries later.

Assumption, a city in Paraguay. See *Asuncion*.

Assurance. See *Insurance*.

Assyr'ia (the *Asshur* of the Hebrews, *Athurā* of the ancient Persians), an ancient monarchy in Asia, intersected by the upper course of the Tigris, and having the Armenian mountains on the north and Babylonia on the south; area, probably about 100,000 sq. miles; surface partly mountainous, hilly, or undulating, partly a portion of the fertile Mesopotamian plain. The numerous remains of ancient habitations show how thickly this vast flat must have once been peopled; now, for the most part, it is

a mere wilderness. The chief cities of Assyria in the days of its prosperity were Nineveh, the site of which is marked by mounds opposite Mosul (Nebi Yunus and Koyunjik), Calah or Kalakh (the modern Nimrud), Asshur or Al Asur (Kalah Sherghat), Sargina (Khorsabad), and Arbela (Arbil).

Much light has been thrown on the history of Assyria by the decipherment of the cuneiform inscriptions obtained by excavation. The assertion of the Bible that the



Assyrian Soldiers.

early inhabitants of Assyria went from Babylon is in conformity with the traditions of later times, and with inscriptions on the disinterred Assyrian monuments. For a long period the country was subject to governors appointed by the kings of Babylon, but about B.C. 1500 it became indepen-

dent. About the end of the fourteenth century its king, Shalmaneser, is said to have founded the city of Kalakh or Calah; his son Tiglath-ninip conquered the whole of the valley of the Euphrates. The five following reigns were chiefly occupied by wars with the Babylonians. About 1120 Tiglath-Pileser I., one of the greatest of the sovereigns of the first Assyrian monarchy, ascended the throne, and carried his conquests to the Mediterranean on the one side and to the Caspian and the Persian Gulf on the other. At his death there ensued a period of decline, which lasted over 200 years. Under Assur-nazir-pal, who reigned from 884 to 859 B.C., Assyria once more advanced to the position of the leading power in the world, the extent of his kingdom being greater than that of Tiglath-Pileser. The magnificent palaces, temples, and other buildings of his reign prove the advance of the nation in wealth, art, and luxury. In 859 he was succeeded by his son Shalmaneser II., whose career

of conquest was equally successful. He reduced Babylon to a state of vassalage, and came into hostile contact with Benhadad and Hazael of Damascus, and with Ahab and Jehu of Israel, from whom he exacted tribute, as also from the kings of Tyre and Sidon. The old dynasty came to an end in the person of Assurnirari II., who was driven from the throne by a usurper, Tiglath-Pileser, in 745, after a struggle of some years. No sooner was this able ruler firmly seated on the throne than he made an expedition into Babylonia, followed by

another to the east in 744. A year later he defeated the confederate princes of Armenia, Syria, &c., and advancing against Syria, overthrew the ancient kingdoms of Damascus and Hamath, and placed his vassal Hosea on the throne of Samaria. A protracted campaign in Media (737-735), another in Armenia, and the expedition into Syria mentioned in 2 Kings xvi., are among the most important events of the latter years of his reign. Tiglath-Pileser carried the Assyrian arms from Lake Van on the north to the Persian Gulf on the south, and



Hunting Wild Bull, from Monuments at Nineveh.

from the confines of India on the east to the Nile on the west. He was, however, driven from his throne by Shalmaneser IV. (727), who blockaded Tyre for five years, invaded Israel, and besieged Samaria, but died before the city was reduced. His successor Sargon (722-705), a usurper, claimed descent from the ancient Assyrian kings. After taking Samaria and leading over 27,000 people captive, he overthrew the combined forces of Elam (Susiana) and Babylon. He defeated the King of Hamath, who along with other princes had revolted, took him prisoner, and flayed him alive, advanced through Philistia and captured Ashdod; then pushing southwards totally defeated the forces of Egypt and Gaza at Raphia (719). The revolted Armenians had also more than once to be put down. In 710 Merodach-Baladan was driven out of Babylonia by Sargon, after holding it for twelve years as an independent king, and being supported by the rulers of Egypt and Palestine; his allies were also crushed, Judah was overrun, and Ashdod levelled to the ground. Sargon latterly crossed over and

took Cyprus, where he left an inscription telling of his expedition. He spent the latter years of his reign in internal reforms, in the midst of which he was murdered, being succeeded by Sennacherib, one of his younger sons, in 705. Sennacherib at once had to take up arms against Merodach-Baladan, who had again obtained possession of Babylon. In 701 fresh outbreaks in Syria led him in that direction. He captured Zidon and Askelon, and defeated Hezekiah and his Egyptian and Ethiopian allies, and forced him to pay tribute, after which he returned to Assyria to overawe the Babylonians, Elamites, and the northern hill tribes. A second expedition into Syria is briefly recorded in 2 Kings xix., where we are told that, as his army lay before Libnah, in one night the angel of Jehovah went out, and smote in the camp of the Assyrians 185,000 men (2 Kings xix. 35). In 681 he was murdered by his two sons, Adrammelech and Sharezer, but they were defeated by their brother Esar-haddon, who then mounted the throne. Esar-haddon fixed his residence at Babylon, and made it his capital. The

ASSYRIA.

most important event of this reign was the conquest of Egypt, which was reduced to a state of vassalage, the Ethiopian ruler Tirhakah being driven out and the land divided into twenty separate kingdoms, the rulers of which were the vassals of Esarhaddon. He associated his son Assur-bani-pal with him in the government of the kingdom (669), and two years later this prince (the Sardanapalus of the Greeks) became sole ruler. In 652 a general insurrection broke out, headed by Sammaghes, governor of Babylonia, Assur-bani-pal's own brother, and including Babylonia, Egypt, Palestine, and Arabia. Egypt was the only power, however, which regained its independence; fire, sword, and famine reduced the rest to submission. In 640 the Medes revolted, and latterly made themselves independent. Though the king's character was marked by cruelty and sensuality, he was a zealous patron of the arts and learning. He died in 625, and was succeeded by his son Assur-emid-ilin (or Sarakos), under whom Babylon definitely threw off the Assyrian yoke. The country continued rapidly to decline, fighting hard for existence until the capital Nineveh was captured and burned by the allied forces of the Medes and Babylonians, about 607 or 606 B.C. The story of Sardanapalus associated with this event is a mere myth or legend. Assyria now fell partly to Media, partly to Babylonia, and afterwards formed with Babylonia one of the satrapies of the Persian empire. In 312 B.C. it became part of the kingdom of the Seleucidæ; later on it came under Parthian rule, and was more than once a Roman possession. For a long period it was under the caliphs of Bagdad. In 1638 the Turks wrested it from the Persians, and it has continued under their dominion since that date.

The original inhabitants of Assyria and Babylonia are known as Accadians (or Sumerians). They belonged to the Turanian or Ural-Altaic race, and were, therefore, of the same stock as that from which the Finns, Turks, and Magyars have descended. In early times a Semitic race of people spread themselves over the country, and mingled with or supplanted the original inhabitants, while their language took the place of the Accadian, the latter becoming a dead language. These later Assyrians were thus akin to the Hebrews, Phœnicians, and modern Arabians. Their language differed little from the Babylonian, and both retained

traces of the influence of the earlier Accadian. Assyrian is closely allied to Hebrew and Phœnician, and changed little throughout the 1500 years during which we can trace it in the inscriptions. It continued to be written with the cuneiform or arrow-headed character down to the third century B.C. The greater part of the Assyrian literature was stamped in minute characters on baked bricks, the subjects comprising hymns to the gods, mythological and epic poems, and works on history, chronology, astrology, law, &c. The Assyrian religion was almost the same as that of Babylonia, but in addition to the worship of the Babylonian deities the Assyrians adored their national deity Assur, who was called king of all the gods, the god who created himself. He was symbolically represented by a winged circle enclosing the figure of an archer. After Assur came twelve chief deities, including Anu, the father of the gods; Bel, the lord of the world; Hea, the lord of the sea; Sin, the moon-god; Shamas, the sun-god; Istar, a powerful goddess with various attributes; Ninip, god of hunting (the man-bull); Nergal, god of war (the man-lion); &c. A number of spirits, good and evil, presided over the minor operations of nature. There were set forms regulating the worship of all the gods and spirits, and prayers to each were inscribed on clay tablets with blanks for the names of the persons using them.

The Assyrians were far advanced in art and industry, and in civilization in general. They constructed large buildings, especially palaces, of a most imposing character, the materials being brick, burned or sun-dried, stone, alabaster slabs for lining and adorning the walls internally and externally, and timber for pillars and roofs. These alabaster slabs were elaborately sculptured with designs serving to throw much light on the manners and customs of the people. A most characteristic feature of the palaces were gigantic figures of winged, human-headed bulls, placed at gateways (often arched over) or other important points; figures of lions, &c., were also similarly employed. The palaces were raised on high terraces, and often comprised a great number of apartments; there were no windows, light being obtained by carrying the walls up to a certain height and then raising on them pillars to support the roof and admit light and air. The Assyrian sculptures, as a rule, were in relief, figures in the full round being the exception. In many cases, however,

as in those of winged bulls and other monsters, a compromise was attempted between the full round and relief, the heads being worked free and the body in relief, with an additional leg to meet the exigencies of different points of view. More than three-quarters of the reliefs are of warlike scenes; hunting scenes are also favourite subjects; occasionally industrial scenes in connection with palace building are represented, and less frequently religious ceremonials. The artists had no conception of perspective. In some of the hunting scenes an exceedingly high level of art is attained. The vestiges of Assyrian painting consist chiefly of fragments of stucco and glazed tiles, on which are bands of ornament, rows of rosettes and anthemions, woven strap-work, conventionalized mythic animals, and occasionally figures. In these traces of Egyptian influence are to be found, but the Assyrian figure type is for the most part of a more voluptuous and vigorous fulness than the Egyptian. Of the advanced condition of the Assyrians in various other respects we have ample evidence. They understood and applied the arch; constructed tunnels, aqueducts, and drains; used the pulley, the lever, and the roller; engraved gems in a highly artistic way; understood the arts of inlaying, enamelling, and overlaying with metals; manufactured porcelain, transparent and coloured glass, and were acquainted with the lens; and possessed vases, jars, and other dishes, bronze and ivory ornaments, bells, gold ear-rings and bracelets of excellent design and workmanship. Their household furniture also gives a high idea of their skill and taste. The cities of Nineveh, Assur, and Arbela had each their royal observatories, superintended by astronomers-royal, who had to send in their reports to the king twice a month. At an early date the stars were numbered and named; a calendar was formed, in which the year was divided into twelve months (of thirty days each), called after the zodiacal signs, but as this division was found to be inaccurate an intercalary month was added every six years. The week was divided into seven days, the seventh being a day of rest; the day was divided into twelve periods of two hours each, each of these being subdivided into sixty minutes, and these again into sixty seconds. The Assyrians employed both the dial and the clepsydra. Eclipses were recorded from a very remote epoch, and their recurrence roughly determined. The prin-

cipal astronomical work, called the Illumination of Bel, was inscribed on seventy tablets, and went through numerous editions, one of the latest being in the British Museum. It treats among other things of comets, the polar star, the conjunction of the sun and moon, and the motions of Venus and Mars.

Assyriology, the department of knowledge which deals with Assyrian antiquities and history, is entirely a modern study. Until 1842 the materials for Assyrian history were derived from the Jewish records of the Old



Assyrian Shooting Birds.

Testament and from such comparatively late writers as Herodotus and Ctesias. In 1843-46 M. Botta, the French consul at Mosul, made the first explorations at Koyunjik and Khorsabad, and the objects thus obtained were transported to the Louvre. In 1845 and in 1849 valuable researches were conducted by Mr. Layard, and subsequently continued by the British Museum trustees. Later researches were instituted by the proprietors of the Daily Telegraph, and then by government, in which Mr. George Smith met with considerable success. More recently Mr. Rassam has carried on the work of discovery. In the decipherment and translation of the cuneiform inscriptions among the most distinguished names are those of Sir Henry Rawlinson, Mr. H. Fox Talbot, Mr. George Smith, M. Jules Oppert, Dr. Schrader, Dr. Hincks, Rev. A. H. Sayce, Mr. Le Page Renouf, Prof. Terrien de la Couperie, Mr. Boscawen, and Mr. Pinches.

AST, GEORG ANTON FRIEDRICH, German scholar and philosopher, born 1776, died 1841. He wrote on æsthetics and the history of philosophy, but is best known as an

editor of Plato, whose works he published with a Latin translation and commentary.

As'tacus. See *Crayfish*.

Astar'te, a Syrian goddess, probably corresponding to the *Semēlē* of the Greeks and the *Ashtaroth* of the Hebrews, and representing the productive power of nature. She was a moon-goddess. Some regard her as corresponding with *Hera* (*Juno*), and others with *Aphroditē*. See *Ashtaroth*.

Astatic needle, a magnetic needle having another needle of the same intensity fixed parallel to it, the poles being reversed, so that the needles neutralize one another, and are unaffected by the earth's magnetism: used in the *astatic galvanometer*.

As'ter, a genus of plants, nat. order Compositæ, comprehending several hundred species, mostly natives of North America, although others are widely distributed. Many are cultivated as ornamental plants. One, *A. Tripolium*, is native in Britain, and is found in salt marshes, having a pretty purple flower. Asters generally flower late in the season, and some are hence called Michaelmas or Christmas Daisies. The China Aster (*Aster* or *Callistēphus sinensis*) is a very showy annual, of which there are many varieties.

Asterabad'. See *Astrabad*.

Aste'ria, a name applied to a variety of corundum, which displays an opalescent star of six rays of light when cut with certain precautions; and also to the *cat's-eye*, which consists of quartz, and is found especially in Ceylon.

Aster'idæ. See *Asteroidea*.

As'terisk, the figure of a star, thus *, used in printing and writing, as a reference to a passage or note in the margin, or to fill the space when a name, or the like, is omitted.

Asteroi'dea, the order of the Echinodermata to which the star-fishes belong. See *Star-fishes*.

As'teroids, or PLANETOIDS, a numerous group of very small planets revolving round the sun between the orbits of Mars and Jupiter, remarkable for the eccentricity of their orbits and the large size of their angle of inclination to the ecliptic. The diameter of the largest is not supposed to exceed 450 miles, while most of the others are very much smaller. They number over 330, and new members are being constantly discovered. Ceres, the first of them, was discovered 1st January, 1801, and within

three years more Pallas, Juno, and Vesta were seen. The extraordinary smallness of these bodies, and their nearness to each other, gave rise to the opinion that they were but the fragments of a planet that had formerly existed and had been brought to an end by some catastrophe. For nearly forty years investigations were carried on, but no more planets were discovered till 8th December, 1845, when a fifth planet in the same region was discovered. The rapid succession of discoveries that followed was for a time taken as a corroboration of the disruptive theory, but the breadth of the zone occupied makes the hypothesis of a shattered planet more than doubtful. Their mean distances from the sun vary between 200,000,000 and 300,000,000 miles; the periods of revolution between 1191 days (Flora) and 2868 (Hilda). Their eccentricities and inclinations are on the average greater than those of the earth, but their total mass does not exceed one-fourth that of the earth.

Asterol'epis, a genus of gigantic ganoid fishes, now found only in a fossil state in the Old Red Sandstone. From the remains it would seem that these fishes must have sometimes attained the length of 18 or 20 feet.

Asthma (as't'ma), difficulty of respiration, returning at intervals, with a sense of stricture across the chest and in the lungs, a wheezing, hard cough at first, but more free towards the close of each paroxysm, with a discharge of mucus, followed by a remission. Asthma is essentially a spasm of the muscular tissue which is contained in the smaller bronchial tubes. It generally attacks persons advanced in years, and seems, in some instances, to be hereditary. The exciting causes are various—accumulation of blood or viscid mucus in the lungs, noxious vapours, a cold and foggy atmosphere, or a close, hot air, flatulence, accumulated fæces, violent passions, organic diseases in the thoracic viscera, &c. By far the most important part of the treatment consists in the obviating or removing the several exciting causes. It seldom proves fatal except as inducing dropsy, consumption, &c.

Asti (às'tē), a town of Northern Italy, province of Alessandria, 28 miles E.S.E. of Turin, the see of a bishop, with an old cathedral. In the middle ages it was one of the most powerful republics of Northern Italy. It was the birthplace of Alfieri, the

poet, whose statue adorns the principal square. A favourite wine is produced in the neighbourhood. Pop. 17,340.

Astig'matism, a malformation, congenital or accidental, of the lens of the eye, in con-



Cathedral Church of St. Magdalen, Asti.

sequence of which the individual does not see objects in the same plane, although they may really be so. It is due to the degree of convexity of the horizontal and vertical meridians being different, so that corresponding rays, instead of converging into one point, meet at two foci.

Astle, THOMAS, English antiquary, born 1734, died 1803. He was a trustee of the British Museum and keeper of the public records in the Tower. His chief work, *The Origin and Progress of Writing*, appeared in 1784.

Astom'ata, one of the two groups into which the Protozoa are divided with regard to the presence or absence of a mouth, of which organ the Astomata are destitute. The group comprises two classes, Gregarinida and Rhizopoda. See *Stomatoda*.

Aston Manor, a local board district, and since 1885 a parl. bor. of England, situated about $1\frac{1}{2}$ mile E.N.E. from Birmingham. Pop. 1891, 68,639.

Astor, JOHN JACOB, born near Heidelberg, Germany, 1763; died at New York,

1848. In 1783 he emigrated to the United States, settled at New York, and became extensively engaged in the fur trade. In 1811 the settlement of Astoria, founded by him, near the mouth of the Columbia river, was formed to serve as a central depot for the fur trade between the lakes and the Pacific. He subsequently engaged in various speculations, and died worth \$20,000,000, leaving \$400,000 to found the ASTOR LIBRARY in New York. This institution is contained in a splendid building, enlarged in 1859 at the cost of his son, and comprises about 260,000 volumes.

Astor'ga, a city of Spain, prov. of Leon; the *Asturica Augusta* of the Romans. It figured prominently during the Peninsular war; was taken by the French after an obstinate defence, 1810; and retaken by the Spaniards, 1812. Pop. 5000.

Asto'ria, a town of Oregon, U. States, on the Columbia river, with numerous salmon-canning establishments. Pop. 6184. See *Astor*.

Astrabad', a town of Persia, capital of a province of the same name on the Caspian. It was formerly the residence of the Kajar princes, the ancestors of the present Persian dynasty. It is very unhealthy, and has been called the *City of the Plague*. Pop. estimated at from 4000 to 18,000.

Astræ'a, in Greek mythology, the daughter of Zeus and Themis, and goddess of justice. During the golden age she dwelt on earth, but on that age passing away she withdrew from the society of men and was placed among the stars, where she forms the constellation Virgo. The name was given to one of the asteroids, discovered in 1845. It revolves round the sun in 1511.10 solar days, and is about $2\frac{1}{2}$ times the distance of the earth from the sun.

As'tragal, in architecture, a small semi-circular moulding, with a fillet beneath it, which surrounds a column in the form of a ring, separating the shaft from the capital.

Astrag'alus, the upper bone of the foot supporting the tibia; the huckle, ankle, or sling bone. It is a strong irregularly-shaped bone, and is connected with the others by powerful ligaments.

Astrag'alus, a genus of papilionaceous plants, herbaceous or shrubby, and often spiny. *A. gummifer* yields gum tragacanth.

Astrakhan (ás-trá-hán'), a Russian city, capital of government of same name, on an elevated island in the Volga, about 30 miles above its mouth in the Caspian, communi-

cating with the opposite banks of the river by numerous bridges. It is the seat of a Greek archbishop and has a large cathedral, as well as places of worship for Mohammedans, Armenians, &c. The manufactures are large and increasing, and the fisheries (sturgeon, &c.) very important. It is the chief port of the Caspian, and has regular steam communication with the principal towns on its shores. Pop. 73,710, composed of various races.—The government has an area of 85,000 square miles. It consists almost entirely of two vast steppes, separated from each other by the Volga, and forming for the most part arid sterile deserts. Pop. 1889, 932,539.

Astrakhan, a name given to sheep-skins with a curled woolly surface obtained from a variety of sheep found in Bokhara, Persia, and Syria; also a rough fabric with a pile in imitation of this.

Astral Spirits, spirits formerly believed to people the heavenly bodies or the aerial regions. In the middle ages they were variously conceived as fallen angels, souls of departed men, or spirits originating in fire, and belonging neither to heaven, earth, nor hell. Paracelsus regarded them as demoniacal in character.

Astrin'gent, a medicine which contracts the organic textures and canals of the body, thereby checking or diminishing excessive discharges. The chief astringents are the mineral acids, alum, lime-water, chalk, salts of copper, zinc, iron, lead, silver; and among vegetables catechu, kino, oak-bark, and galls.

Astroca'ryum, a genus of tropical American palms, species of which yield oil and valuable fibre. Tucum oil and tucum thread are obtained from *A. vulgäre*.

As'trolabe, an instrument formerly used for taking the altitude of the sun or stars, now superseded by the quadrant and sextant. The name was also formerly given to an armillary sphere.

Astrol'ogy, literally, the science or doctrine of the stars. The name was formerly used as equivalent to astronomy, but is now restricted in meaning to the pseudo-science which pretends to enable men to judge of the effects and influences of the heavenly bodies on human and other mundane affairs, and to foretell future events by their situations and conjunctions. As usually practised the whole heavens, visible and invisible, was divided by great circles into twelve equal parts, called *houses*. As the circles were supposed to remain immovable every heaven-

ly body passed through each of the twelve houses every twenty-four hours. The portion of the zodiac contained in each house was the part to which chief attention was paid, and the position of any planet was settled by its distance from the boundary circle of the house, measured on the ecliptic. The houses had different names and different powers, the first being called the house of life, the second the house of riches, the third of brethren, the sixth of marriage, the eighth of death, and so on. The part of the heavens about to rise was called the *ascendant*, the planet within the house of the ascendant being *lord of the ascendant*. The different *aspects* of the planets were of great importance. To *cast a person's nativity* (or *draw his horoscope*) was to find the position of the heavens at the instant of his birth, which being done the astrologer, who knew the various powers and influences possessed by the sun, the moon, and the planets, could predict what the course and termination of that person's life would be. The temperament of the individual was ascribed to the planet under which he was born, as *saturnine* from *Saturn*, *jovial* from *Jupiter*, *mercurial* from *Mercury*, &c., words which are now used with little thought of their original meaning. The virtues of herbs, gems, and medicines were supposed to be due to their ruling planets.

Astron'omy (from Gr. *astron*, a heavenly body, and *nomos*, law) is that science which investigates the motions, distances, magnitudes, and various phenomena of the heavenly bodies. That part of the science which gives a description of the motions, figures, periods of revolution, and other phenomena of the heavenly bodies is called *descriptive astronomy*; that part which teaches how to observe the motions, figures, periodical revolutions, distances, &c., of the heavenly bodies, and how to use the necessary instruments, is called *practical astronomy*; and that part which explains the causes of their motions, and demonstrates the laws by which those causes operate, is termed *physical astronomy*. Recent years have added two new fields of investigation which are full of promise for the advancement of astronomical science. The first of these—celestial *photography*—has furnished us with invaluable light-pictures of the sun, moon, and other bodies, and has recorded the existence of myriads of stars invisible even by the best telescopes; while the second, *spectrum analysis*, now at work in many

hands, reveals to us a knowledge of the physical constituents of the universe, telling us for instance that in the sun (or his atmosphere) there exist many of the elements familiar to us on the earth. It has also been applied to the determination of the velocity with which stars are approaching to, or receding from, our system; and to the measurement of movements taking place within the solar atmospheric envelopes. From analysis of some of the unresolved nebulae the inference is drawn that they are not star-swarms but simply cosmical vapour; whence a second inference results favourable to the hypothesis of the gradual condensation of nebulae, and the successive evolutions of suns and systems.

The most remote period to which we can go back in tracing the history of astronomy refers us to a time about 2500 B.C., when the Chinese are said to have recorded the simultaneous conjunction of Saturn, Jupiter, Mars, and Mercury with the moon. This remarkable phenomenon is found, by calculating backward, to have taken place 2460 B.C. Astronomy has also an undoubtedly high antiquity in India. The mean annual motion of Jupiter and Saturn was observed so early as 3062 years B.C.; tables of the sun, moon, and planets were formed, and eclipses calculated. In the time of Alexander the Great, the Chaldeans or Babylonians had carried on astronomical observations for 1900 years. They regarded comets as bodies travelling in extended orbits, and predicted their return; and there is reason to believe that they were acquainted with the true system of the universe. The priests of Egypt gave astronomy a religious character; but their knowledge of the science is testified to only by their ancient zodiacs and the position of their pyramids with relation to the cardinal points. It was among the Greeks that astronomy took a more scientific form. Thales of Miletus (born 639 B.C.) predicted a solar eclipse, and his successors held opinions which are in many respects wonderfully in accordance with modern ideas. Pythagoras (500 B.C.) promulgated the theory that the sun is the centre of the planetary system. Great progress was made in astronomy under the Ptolemies, and we find Timochares and Aristyllus employed about 300 B.C. in making useful planetary observations. But Aristarchus of Samos (born 267 B.C.) is said, on the authority of Archimedes, to have far surpassed them, by teaching the double motion of the earth

around its axis and around the sun. A hundred years later Hipparchus determined more exactly the length of the solar year, the eccentricity of the ecliptic, the precession of the equinoxes, and even undertook a catalogue of the stars. It was in the second century after Christ that Claudius Ptolemy, a famous mathematician of Pelusium in Egypt, propounded the system that bears his name, viz.: that the earth was the centre of the universe, and that the sun, moon, and planets revolved around it in the following order: nearest to the earth was the sphere of the moon; then followed the spheres of Mercury, Venus, the Sun, Mars, Jupiter, and Saturn; then came the sphere of the fixed stars; these were succeeded by two *crystalline* spheres and an outer sphere named the *primum mobile* or first motion, which last was again circumscribed by the *cælum empyreum*, of a cubic shape, wherein happy souls found their abode. The Arabs began to make scientific astronomical observations about the middle of the eighth century, and for 400 years they prosecuted the science with assiduity. Ibn-Yunis (1000 A.D.) made important observations of the disturbances and eccentricities of Jupiter and Saturn. In the sixteenth century Nicholas Copernicus, born in 1473, introduced the system that bears his name, and which gives to the sun the central place in the solar system, and shows all the other bodies, the earth included, revolving around him. This arrangement of the universe (see *Copernicus*) came at length to be generally received on account of the simplicity it substituted for the complexities and contradictions of the theory of Ptolemy. The observations and calculations of Tycho Brahe, a Danish astronomer, born in 1546, continued over many years, were of the highest value, and claim for him the title of regenerator of practical astronomy. His assistant and pupil, Kepler, born in 1571, was enabled, principally by the aid he received from his master's labours, to arrive at those laws which have made his name famous: 1. That the planets move, not in circular, but in elliptical orbits, of which the sun occupies a focus. 2. That the radius vector, or imaginary straight line joining the sun and any planet, moves over equal spaces in equal times. 3. That the squares of the times of the revolutions of the planets are as the cubes of their mean distances from the sun. Galileo, who died in 1642, advanced the science by his observations and

by the new revelations he made through his telescopes, which established the truth of the Copernican theory. Newton, born in 1642, carried physical astronomy suddenly to comparative perfection. Accepting Kepler's laws as a statement of the facts of planetary motion he deduced from them his theory of gravitation. The science was enriched towards the close of the eighteenth century by the discovery by Herschel of the planet Uranus and its satellites, the resolution of the Milky Way into myriads of stars, and the unravelling of the mystery of nebulae and of double and triple stars. The splendid analytical researches of Lalande, Lagrange, Delambre, and Laplace, mark the same period. The nineteenth century opened with the discovery of the first four minor planets; and the existence of another planet (Neptune) more distant from the sun than Uranus, was, in 1845, simultaneously and independently predicted by Leverrier and Adams. Of late years the sun has attracted a number of observers, the spectroscope and photography having been especially fruitful in this field of investigation. From recent transit observations the former calculated distance of the sun has been corrected, and is now given as 92,560,000 miles. An interesting recent discovery is that of the two satellites of Mars. The existence of an intra-Mercurial planet, which has been named Vulcan, has not yet been verified. Much valuable work has of late been accomplished in ascertaining the parallax of fixed stars.

The objects with which astronomy has chiefly to deal are the earth, the sun, the moon, the planets, the fixed stars, comets, nebulae, and meteors. The stellar universe is composed of an unknown host of stars, many millions in number, the most noticeable of which have been formed into groups called *constellations*. The nebulae are cloud-like patches of light scattered all over the heavens. Some of them have been resolved into star-clusters, but many of them are but masses of incandescent gas. A favourite theory regarding the fixed stars is that they form a system to which our sun belongs, and that many of the nebulae are similar systems situated far outside of our own. The fixed stars preserve, at least to unaided vision, an unalterable relation to each other, because of their vast distance from the earth. Their apparent movement from east to west is the result of the earth's revolution on its

axis in twenty-four hours from west to east. The planets have not only an apparent, but also a real and proper motion, since, like our earth, they revolve around the sun in their several orbits and periods. The nearest of these bodies to the sun—unless the hypothetical *Vulcan* really exists—is *Mercury*. *Venus*, the second planet from the sun, is the brightest and most beautiful of all the planets. The *Earth* is the first planet accompanied by a satellite or moon. *Mars*, the next planet, has two satellites, as already mentioned. Its surface has a variegated character, and the existence of land, water, snow, and ice has been assumed. The *Asteroids*, of which over 330 have been observed, form a broad zone of small bodies circulating in the space between Mars and Jupiter. *Jupiter*, the largest planet of the system, has four satellites, discovered by Galileo, and in 1892 a fifth was noted, from Lick Observatory, Cal. *Saturn*, with his eight moons, and his broad thin rings with edges turned towards the planet, is, perhaps, the most striking telescopic object in the heavens. *Uranus*—discovered by Herschel in 1781—is accompanied by four satellites. *Neptune*, the farthest removed from the sun, has one satellite, the motion of which is retrograde. Besides the planets, quite a number of comets are known to be members of the solar system. The physical constitution of these bodies is still one of the enigmas of astronomy. The observation of meteors has recently attracted much attention. They most frequently occur in the autumn, and have been supposed to be the debris of comets. See articles *Earth*, *Sun*, *Moon*, *Planet*, *Comet*, *Stars*, *Mercury*, *Venus*, *Mars*, *Jupiter*, *Saturn*, *Asteroids*, &c.

Astur. See *Goshawk*.

Astu'ria, or THE ASTURIAS, a Spanish principality, now forming the province of Oviedo, on the north coast of Spain; an alpine region, with steep and jagged mountain ridges, valuable minerals, luxuriant grazing lands, and fertile well-watered valleys. The hereditary prince of Spain has borne since 1388 the title of Prince of the Asturias.

Asty'ages (-jēz), last king of the Medes, 593–558 B.C., deposed by Cyrus, an event which transferred the supremacy from the Medes to the Persians.

Asuncion (ä-sun-thē-on'), or NUESTRA SEÑORA DE LA ASUNCION (English, *Assumption*), the chief city of Paraguay, on the

river Paraguay, picturesquely situated and with good public buildings. It was founded in 1536 on the feast of the Assumption. Its trade is mostly in the yerba tea, hides, tobacco, oranges, &c. It was taken and plundered by the Brazilians in 1869, and some of the leading buildings still remain in a half-ruined condition. A railway runs for a short distance into the interior. Pop. 24,838.

As'wail, the native name for the sloth-bear (*Ursus labiatus*) of the mountains of India, an uncouth, unwieldy animal, with very long black hair, inoffensive when not attacked. Its usual diet consists of roots, bees'-nests, grubs, snails, ants, &c. Its flesh is in much favour as an article of food. When captured young it is easily tamed.

Asy'lum, a sanctuary or place of refuge, where criminals and debtors sheltered themselves from justice, and from which they could not be taken without sacrilege. Temples were anciently asylums, as were Christian churches in later times. (See *Sanctuary*.) The term is now usually applied to an institution for receiving, maintaining, and, so far as possible, ameliorating the condition of persons labouring under certain bodily defects or mental maladies; sometimes also a refuge for the unfortunate.

Asymptote (as'im-tôt), in geometry, a line which is continually approaching a curve, but never meets it, however far either of them may be prolonged. This may be conceived as a tangent to a curve at an infinite distance.

Asyn'deton, a figure of speech by which connecting words are omitted; as 'I came, saw, conquered.'

Atacama (â-tâ-kä'mâ), a desert region on the west coast of S. America belonging to Chili, comprised partly in the prov. of Atacama, partly in the territory of Antofagasta. It mainly consists of a plateau extending from Copiapó northward to the river Loa, and lies between the Andes and the sea. It forms the chief mining district of Chili, there being here rich silver mines, while gold is also found, as well as argentiferous lead, copper, nickel, cobalt, and iron; with guano on the coast. The northern portion till recently belonged to Bolivia. The Chilian prov. of Atacama has an area of 43,180 sq. m. and a pop. of 66,067.

Ataca'mite, a mineral consisting of a combination of the protoxide and chloride of copper, occurring abundantly in some parts of South America, as at Atacama,

whence it has its name. It is worked as an ore in South America, and is exported to England.

Atahual'pa, the last of the incas, succeeded his father in 1529 on the throne of Quito, whilst his brother Huascar obtained the Kingdom of Peru. They soon made war against each other, when the latter was defeated, and his kingdom fell into the hands of Atahualpa. The Spaniards, taking advantage of these internal disturbances, with Pizarro at their head, invaded Peru, and advanced to Atahualpa's camp. Here, while Pizarro's priest was telling the inca how the pope had given Peru to the Spaniards, fire was opened on the unsuspecting Peruvians, Atahualpa was captured, and, despite the payment of a vast ransom in gold, was executed (1533).

Atalan'ta, in the Greek mythology, a famous huntress of Arcadia. She was to be obtained in marriage only by him who could outstrip her in a race, the consequence of failure being death. One of her suitors obtained from Aphroditē (Venus) three golden apples, which he threw behind him, one after another, as he ran. Atalanta stopped to pick them up, and was not unwillingly defeated. There was another Atalanta belonging to Bœotia, who cannot very well be distinguished, the same stories being told about both.

Ataman. See *Hetman*.

At'avism (L. *atavus*, an ancestor), in biology, the tendency to reproduce the ancestral type in animals or plants which have become considerably modified by breeding or cultivation; the reversion of a descendant to some peculiarity of a more or less remote ancestor.

Ataxy, **Ataxia**, in medicine, irregularity in the animal functions, or in the symptoms of a disease. See *Locomotor ataxy*.

Atba'ra, the most northerly tributary of the Nile. It rises in the Abyssinian highlands, receives several large tributaries, and enters the Nile about 18° N.

Atchafalay'a ('Lost Water'), a river of the U. States, an outlet of the Red River which strikes off before the junction of that river with the Mississippi, flows southward, and enters the Gulf of Mexico by Atchafalaya Bay. Its length is 250 miles.

Atcheen'. See *Acheen*.

Atch'ison, a city of Kansas, United States, on the Missouri, about 30 miles from Leavenworth, an important railway centre with an increasing trade. Pop. 1890, 13,963.

A'tē, among the Greeks, the goddess of hate, injustice, crime, and retribution, daughter of Zeus according to Homer, but of Eris (Strife) according to Hesiod.

At'eles, a genus of American monkeys. See *Spider-monkey*.

Ateliers Nationaux (à-tl-yā nā-syo-nō), or national workshops, were established by the French provisional government in 1848. They interfered much with private trade as about 100,000 workmen threw themselves on the government for work.

Atella'næ Fab'ulæ (called also *Oscan plays*), a kind of light interlude, in ancient Rome, performed not by the regular actors, but by freeborn young Romans; it originated from *Atella*, a city of the Oscans.

Atesh'ga (the place of fire), a sacred place of the Guebres or Persian fire-worshippers, on the peninsula of Apsheron, on the w. coast of the Caspian, visited by large numbers of pilgrims, who bow before the sacred flames which issue from the bituminous soil.

Ath (ät), a fortified town of Belgium, in the province of Hainaut, on the Dender; it carries on weaving, dyeing, and printing cottons. Pop. 8260.

Athabas'ca, a river, lake, and district of Canada. The **ATHABASCA** river rises on the eastern slopes of the Rocky Mountains in the district of Alberta, flows in a N.E. direction through the district of the same name, and falls into Lake Athabasca after a course of about 600 miles.—**LAKE ATHABASCA**, or Lake of the Hills, is about 190 miles S.S.E. of the Great Slave Lake, with which it is connected by means of the Slave River, a continuation of the Peace. It is about 200 miles in length from east to west, and about 35 miles wide at the broadest part, but gradually narrows to a point at either extremity.—The district of **ATHABASCA**, formed in 1882, lies immediately E. of British Columbia and N. of Alberta; area about 122,000 sq. miles. It is intersected by the Athabasca, Hay, Buffalo, Peace and other rivers, and as yet has a scanty population. Large quantities of free gold have been recently discovered on the Albert route, 700 miles from Prince Albert and successfully worked.

Athali'ah, daughter of Ahab king of Israel, and wife of Joram king of Judah. After the death of her son Ahaziah she opened her way to the throne by the murder of forty-two princes of the royal blood. She reigned six years; in the seventh the high-priest Jehoiada placed Joash, the young son

of Ahaziah, who had been secretly preserved, on the throne of his father, and Athaliah was slain. See 2 Kings viii. ix. xi.

Athana'sian Creed, a creed or exposition of Christian faith, supposed formerly to have been drawn up by St. Athanasius, though this opinion is now generally rejected, and the composition often ascribed to Hilary, bishop of Arles (about 430). It is an explicit avowal of the doctrines of the Trinity (as opposed to Arianism, of which Athanasius was a great opponent) and of the incarnation, and contains what are known as the 'damnatory clauses,' in which it declares that damnation must be the lot of those who do not believe the true and catholic faith. It is contained in the Book of Common Prayer, to be read on certain occasion.

Athana'sius, St., Archbishop of Alexandria, a renowned father of the church, born in that city about A.D. 296, died 373. While yet a young man he attended the council at Nice (325), where he gained the highest esteem of the fathers by the talents which he displayed in the Arian controversy. He had a great share in the decrees passed here, and thereby drew on himself the hatred of the Arians. Shortly afterwards he was appointed archbishop of Alexandria. The complaints and accusations of his enemies at length induced the Emperor Constantine to summon him in 334 before the councils of Tyre and Jerusalem, when he was suspended, and afterwards banished to Treves. The death of Constantine put an end to this banishment, and Constantius recalled the holy patriarch. His return to Alexandria resembled a triumph. Deposed again in 340, he was reinstated in 342. Again in 355 he was sentenced to be banished, when he retired into those parts of the desert which were entirely uninhabited. He was followed by a faithful servant, who, at the risk of his life, supplied him with the means of subsistence. Here Athanasius composed many writings, full of eloquence, to strengthen the faith of the believers, or expose the falsehood of his enemies. When Julian the Apostate ascended the throne toleration was proclaimed to all religions, and Athanasius returned to his former position at Alexandria. His next controversy was with the heathen subjects of Julian, who excited the emperor against him, and he was obliged to flee in order to save his life. The death of the emperor and the accession of Jovian (363) again brought him back; but Valens becoming emperor, and the Ar-

ians recovering the superiority, he was once more compelled to flee. He concealed himself in the tomb of his father, where he remained four months, until Valens allowed him to return. From this period he remained undisturbed in his office till he died. Of the forty-six years of his official life he spent twenty in banishment, and the greater part of the remainder in defending the Nicene Creed. His writings, which are in Greek, are on polemical, historical, and moral subjects. The polemical treat chiefly of the doctrines of the Trinity, the incarnation of Christ, and the divinity of the Holy Spirit. The historical ones are of the greatest importance for the history of the church. See *Athanasian Creed*.

A'theism (Greek, *a*, priv., and *Theos*, God), the disbelief of the existence of a God or supreme intelligent being; the doctrine opposed to *theism* or *deism*. The term has been often loosely used as equivalent with *infidelity* generally, with *deism*, with *pantheism*, and with the denial of immortality.

Ath'eling, a title of honour among the Anglo-Saxons, meaning one who is of noble blood. The title was gradually confined to the princes of the blood royal, and in the ninth and tenth centuries is used exclusively for the sons or brothers of the reigning king.

Atheling, EDGAR. See *Edgar Atheling*.

Ath'elney, formerly an island in the midst of fens and marshes, now drained and cultivated, in Somersetshire, England, about 7 miles south-east of Bridgwater. Alfred the Great took refuge in it during a Danish invasion, and afterwards founded an abbey there.

Ath'elstan, King of England, born 895, died 941, succeeded his father, Edward the Elder, in 925. He was victorious in his wars with the Danes of Northumberland, and the Scots, by whom they were assisted. After a signal overthrow of his enemies at Brunanburgh he governed in peace and with great ability.

Athē'na, or **ATHĒNĒ**, a Greek goddess, identified by the Romans with Minerva, the representative of the intellectual powers; the daughter of Zeus (Jupiter) and Mētis (that is, wisdom or cleverness). According to the legend, which is perhaps allegorical, before her birth Zeus swallowed her mother, and Athena afterwards sprang from the head of Zeus with a mighty war shout and in complete armour. In her character of a wise and prudent warrior she was contrasted with the fierce Ares (Mars). In the

wars of the giants she slew Pallas and Enceladus. In the wars of the mortals she aided and protected heroes. She is also represented as the patroness of the arts of peace. The sculptor, the architect, and the painter, as well as the philosopher, the orator, and the poet, considered her their tutelary deity. She is also represented among the healing gods. In all these representations she is the symbol of the thinking faculty, the goddess of wisdom, science, and art; the latter, however, only in so far as invention and thought are comprehended. In the images of the goddess a manly gravity and an air of reflection are united with female beauty in her features. As a warrior she is represented completely armed, her head covered with a gold helmet. As the goddess of peaceful arts she appears in the dress of a Grecian matron. To her insignia belong the Ægis, the Gorgon's head, the round Argive buckler; and the owl, the cock, the serpent, an olive branch, and a lance were sacred to her. All Attica, but particularly Athens, was sacred to her, and she had numerous temples there. Her most brilliant festival at Athens was the Panathenæa.

Athenæ'um, the temple of Athena or Minerva, at Athens, frequented by poets, learned men, and orators. The same name was given at Rome to the school which Hadrian established on the Capitoline Mount for the promotion of literary and scientific studies. In modern times the same name is given to literary clubs and establishments connected with the sciences.

The Athenæum is also the name of the leading British literary journal, established in 1828 and published weekly. Among the names of those that have been connected with it are Sterling, Dilke, Hepworth Dixon, Stebbing, &c.

Athenæ'us, a Greek rhetorician and grammarian, who lived at the end of the second and beginning of the third century after Christ, author of an encyclopædic work, in the form of conversation, called the Feast of the Learned (*Deipnosophistæ*), which is a rich but ill-arranged treasure of historical, antiquarian, philosophical, grammatical, &c., knowledge.

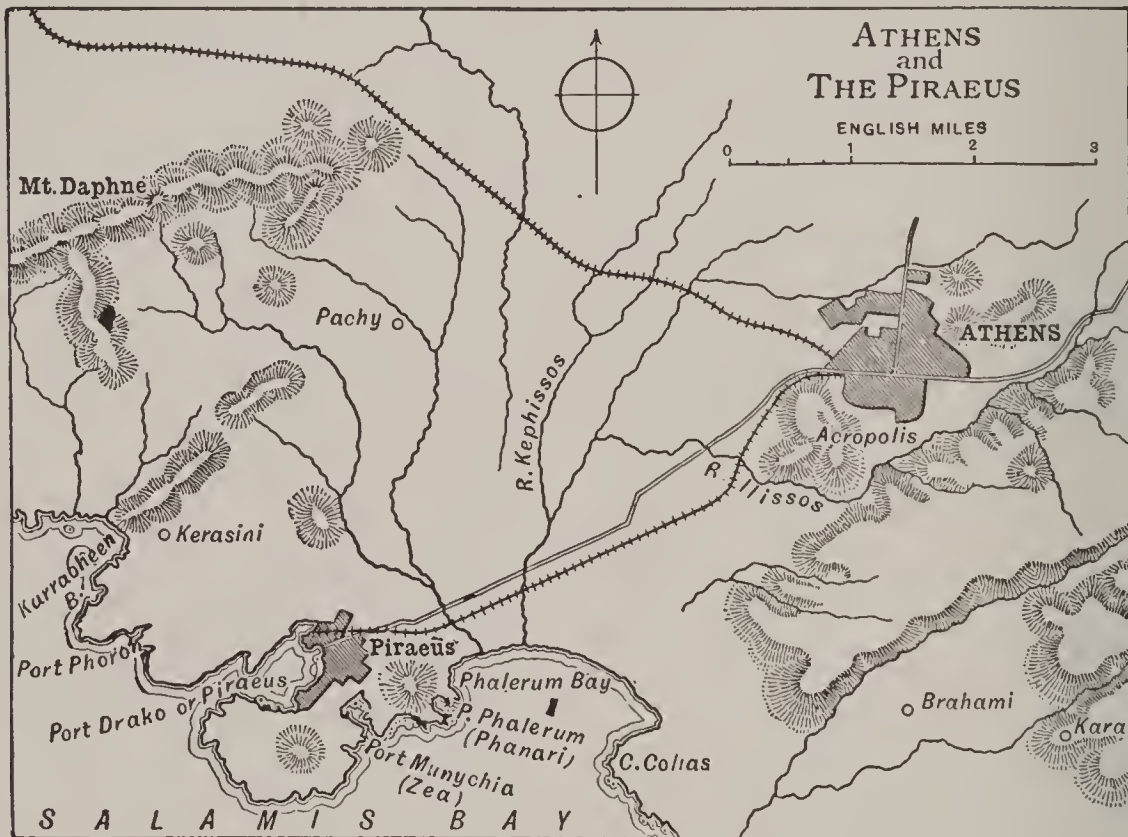
Athenag'oras, a Platonic philosopher of Athens, a convert to Christianity, who wrote a Greek Apology for the Christians, addressed to the Emperor Marcus Aurelius, in 177, one of the earliest that appeared.

Ath'ens (Gr. *Athēnai*, L. *Athenæ*), an-

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ciently the capital of Attica and centre of Greek culture, now the capital of the Kingdom of Greece. It is situated in the central plain of Attica, about 4 miles from the Saronic Gulf or Gulf of Ægina, an arm of the Ægean Sea running in between the mainland and the Peloponnesus. It is said to have been founded about 1550 B.C. by Cecrops, the mythical Pelasgian hero, and to have borne the name Cecropia until under Erechtheus it received the name of Athens

in honour of Athēnē. The Acropolis, an irregular oval crag 150 ft. high, with a level summit 1000 ft. long by 500 in breadth, was the original nucleus of the city, which according to tradition was extended by Theseus when Athens became the head of the confederate Attic states. The three chief eminences near the Acropolis—the Areopagus to the north-west, the Pnyx to the south-west, and the Museum to the south of the Pnyx—were thus included within the



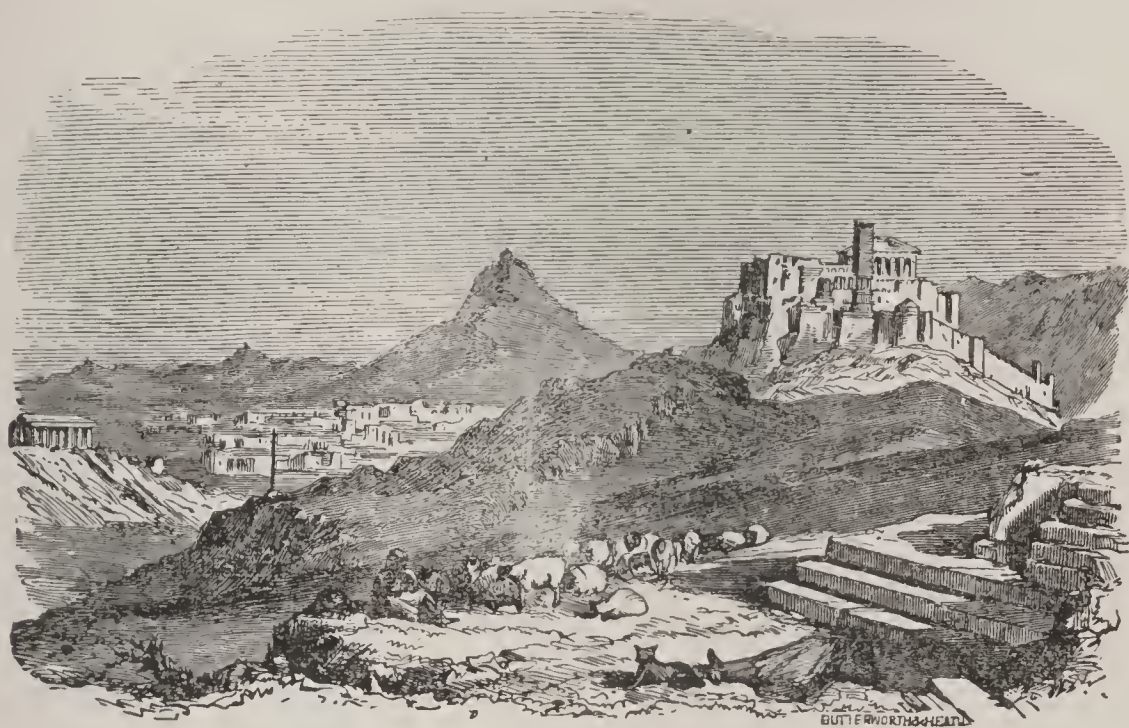
city boundary as the sites of its chief public buildings, the city itself, however, afterwards taking a northerly direction. On the east ran the Ilissus and on the west the Cephissus, while to the south-west lay three harbours—Phalerum, the oldest and nearest; the Piræus, the most important; and Munychia, the Piræan Acropolis. At the height of its prosperity the city was connected with its harbours by three massive walls (the 'long walls'). The architectural development of Athens may be dated from the rule of the Pisistratids (560–510 B.C.), who are credited with the foundation of the huge temple of the Olympian Zeus, completed by Hadrian seven centuries later, the erection of the Pythium or temple of Pythian Apollo, and of the Lyceum or temple of Apollo Lyceus—all near the Ilissus; and to whom were due the inclosure of the Academy, a gym-

nasium and gardens to the north of the city, and the building of the Agora with its Portico or Stoa, Bouleuterium or Senate-house, Tholus, and Prytanium. With the foundation of Athenian democracy under Clisthenes, the Pnyx or place of public assembly, with its semicircular area and cyclopean wall, first became of importance, and a commencement was made to the Dionysiac theatre (theatre of Dionysus or Bacchus) on the south side of the Acropolis. After the destruction wrought by the Persians in 480 B.C. Themistocles reconstructed the city upon practical lines and with a larger area, inclosing the city in new walls $7\frac{1}{2}$ miles in circumference, erecting the north wall of the Acropolis, and developing the maritime resources of the Piræus; while Cimon added to the southern fortifications of the Acropolis, placed on it the temple

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of Wingless Victory, planted the Agora with trees, laid out the Academy, and built the Theseum on an eminence north of the Areopagus; his brother-in-law, Peisianax, erecting the famous Stoa Poecilē, a hall with walls covered with paintings (whence the *Stoics* got their name). Under Pericles the highest point of artistic development was reached. An Odeium was erected on the east of the Dionysiac theatre for the recitations of rhapsodists and musicians; and with the aid of the architects Ictinus and Mnes-

icles and of the sculptor Phidias the Acropolis was perfected. Covering the whole of the western end rose the Propylæa, of Pentelic marble and consisting of a central portico with two wings in the form of Doric temples. Within, to the left of the entrance, stood the bronze statue of Athena Promachus, and beyond it the Erechtheum, containing the statue of Athena Polias; while to the right, on the highest part of the Acropolis, was the marble Parthenon or temple of Athena, the crowning glory of the whole.



Athens.—The Acropolis and Areopagus.

Minor statues and shrines occupied the rest of the area, which was for the time wholly appropriated to the worship of the guardian deities of the city. In the interval between the close of the Peloponnesian war and the battle of Chæronea few additions were made. Then, however, the long walls and Piræus, destroyed by Lysander, were restored by Conon, and under the orator Lycurgus the Dionysiac temple was completed, the Panathenaic stadium commenced, and the choragic monuments of Lysicrates and Thrasyllus erected. Later on Ptolemy Philadelphus gave it the Ptolemæum near the Theseum, Attalus I. the stoa north-east of the Agora, Eumenes II. that near the great theatre, and Antiochus Epiphanes carried on the Olympium. Under the Romans it continued a flourishing city, Hadrian in the second century adorning it with many new buildings. Indeed Athens was at no time more splendid than under the

Antonines, when Pausanias visited and described it. But after a time Christian zeal, the attacks of barbarians, and robberies of collectors made sad inroads among the monuments. About 420 A.D. paganism was totally annihilated at Athens, and when Justinian closed even the schools of the philosophers, the reverence for buildings associated with the names of the ancient deities and heroes was lost. The Parthenon was turned into a church of the Virgin Mary, and St. George stepped into the place of Theseus. Finally, in 1456 the place fell into the hands of the Turks. The Parthenon became a mosque, and in 1687 was greatly damaged by an explosion at the siege of Athens by the Venetians. Enough, however, remains of it and of the neighbouring structures to abundantly attest the splendour of the Acropolis; while of the other buildings of the city, the Theseum and Horologium, or Temple of the Winds,

are admirably preserved, as also are the Pnyx, Panathenaic stadium, &c. Soon after the commencement of the war of liberation in 1821 the Turks surrendered Athens, but captured it again in 1826–27. It was then abandoned until 1830. In 1835 it became the royal residence, and made rapid progress. The modern city mostly lies northwards and eastwards from the Acropolis, and consists mainly of straight and well-built streets. Among the principal buildings are the royal palace, a stately building with a façade of Pentelic marble (completed 1843), the university, the academy, public library, theatre, and observatory. The university was opened in 1836, and has 1400 students. There are valuable museums, in particular the National Museum and that in the Polytechnic School, which embraces the Schliemann collection, &c. These are constantly being added to by excavations. There are four foreign archæological schools or institutes, the French, German, American, and British. Tramways have been made in the principal streets, and the city is connected by railway (6 miles) with its port, the Piræus. Pop. 1889, 107,251.

Athens, the name of many places in the U. States, the chief being in Georgia and containing the Georgia University. Pop. 8627.

Ath'érine (*Atherīna*), the name of a genus of small fishes abundant in the Mediterranean and caught in British waters, some of them being highly esteemed as food.

Ath'erstone, a town in Warwickshire, England, the reputed birthplace of the poet Drayton. Pop. 3667.

Ath'erton, town of England, Lancashire, 13 miles north-west of Manchester; cotton-factories, collieries, iron-works. Pop. 15,833.

Athletes (ath'lēts; Gr. *athlētai*), combatants who took part in the public games of Greece. The profession was an honourable one; tests of birth, position, and character were imposed, and crowns, statues, special privileges, and pensions were among the rewards of success.—*Athletic sports*, if they do not hold such an honourable position to-day as they did in antiquity, are still practised with great enthusiasm and excite the keenest interest in their patrons. Among them are running, jumping, rowing, swimming, cycling, cricket, football, wrestling, throwing the hammer, 'putting' the stone, &c.

Athlone', a town of Ireland, divided by the Shannon into two parts, one in Westmeath, the other in Roscommon; about 76

miles west of Dublin. Its central position has made it one of the chief military depôts, and four railways meet. Pop. 6901.

Athol, a town in Worcester Co., Mass., on Miller river; large manufactures of woollen and boots and shoes; 28 miles from Worcester. Pop. 6318.

Ath'ol, or **ATHOLE**, a mountainous and romantic district in the north of Perthshire, Scotland, giving the title to a duke of the Murray family.

Athor, **HATHOR**, or **HET-HER**, an Egyptian goddess, identified with Aphrodītē or Venus. Her symbol was the cow bearing on its head the solar disc and hawk-feather plumes. Her chief temple was at Denderah. From her the third month of the Egyptian year derived its name.

A'thos (now *Hagion Oros* or *Monte Santo*, that is, Holy Mountain), a mountain 6700 feet high, in European Turkey, terminating the most eastern of the three peninsulas jutting into the Archipelago. The name, however, is frequently applied to the whole peninsula, which is about 30 miles long by 5 broad. It is covered with forests, and plantations of olive, vine, and other fruit trees. Both the surface and coast-line are irregular. The Persian fleet under Mardonius was wrecked here in 493 B.C., and to avoid a similar calamity Xerxes caused a canal, of which traces may yet be seen, to be cut through the isthmus that joins the peninsula to the mainland. On the peninsula there are situated about twenty monasteries and a multitude of hermitages, which contain from 6000 to 8000 monks and hermits of the order of St. Basil. The libraries of the monasteries are rich in literary treasures and manuscripts. Every nation belonging to the Greek Church has here one or more monasteries of its own, which are annually visited by pilgrims. The various religious communities form a species of republic, paying an annual tribute of nearly £4000 to the Turks, and governed by a synod of twenty monastic deputies and four presidents meeting weekly. The privileges which the establishments enjoy they owe to Murad II., who, on account of their voluntary submission, even before the capture of Constantinople, granted them his protection. At the present day no Mohammedan except the Aga Bostanji, who acts as an intermediary between the monks and the sultan, can settle on the peninsula. The revenue of the community is derived from pilgrims, and from a considerable trade

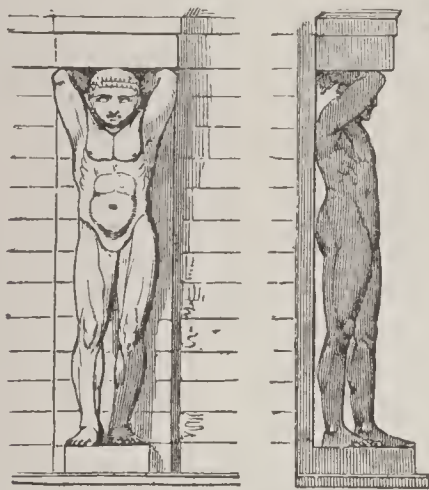
in amulets, rosaries, crucifixes, images, and wooden furniture.

Athy', a town in Ireland, county of Kildare, 37 miles south-west of Dublin, on the Barrow, which is here joined by the Grand Canal. Its chief trade is in corn. Pop. 4181.

Atit'lan, a lake and mountain of Central America in Guatemala. The lake is about 24 miles long and 10 broad; the mountain is an active volcano 12,160 ft. high.

Atlan'ta, a city in the United States, capital of Georgia, on an elevated ridge, 7 miles south-east of the Chattahoochee River. It is an important railway centre; carries on a large trade in grain, paper, cotton, flour, and especially tobacco, and possesses flour-mills, paper-mills, iron-works, &c. Here are Atlanta University for coloured male and female students, a theological college, a medical college, &c. Atlanta suffered severely during the civil war. Pop. 1890, 65,533.

Atlan'tes, or **TELAMŌNES**, in architecture, male figures used in place of columns or



Atlantes.

pilasters for the support of an entablature or cornice. Female figures so employed are termed *caryatides*.

Atlantic City, a fashionable watering-place of the U. States, on the coast of New Jersey. Pop. 1890, 13,055.

Atlantic Ocean, the vast expanse of sea lying between the west coasts of Europe and Africa and the east coasts of North and South America, and extending from the Arctic to the Antarctic Ocean; greatest breadth, between the west coast of Northern Africa and the east coast of Florida, 4150 miles; least breadth, between Norway and Greenland, 930 miles; superficial extent, 25,000,000 square miles. The principal inlets and bays are Baffin's and Hudson's Bays,

the Gulf of Mexico, the Caribbean Sea, the North Sea or German Ocean, the Bay of Biscay, and the Gulf of Guinea. The principal islands north of the equator are Iceland, the Faroe and British Islands, the Azores, Canaries, and Cape de Verd Islands, Newfoundland, Cape Breton, and the West India Islands; and south of the equator, Ascension, St. Helena, and Tristan da Cunha.

The great currents of the Atlantic are the Equatorial Current (divisible into the Main, Northern, and Southern Equatorial Currents), the Gulf-stream, the North African and Guinea Current, the Southern Connecting Current, the Southern Atlantic Current, the Cape Horn Current, Rennel's Current, and the Arctic Current. The current system is primarily set in motion by the trade-winds which drive the water of the intertropical region from Africa towards the American coasts. The Main Equatorial Current, passing across the Atlantic, is turned by the S. American coast, along which it runs at a rate of 30 to 50 miles a day, till, having received part of the North Equatorial Current, it enters the Gulf of Mexico. Issuing thence between Florida and Cuba under the name of the Gulf-stream, it flows with a gradually expanding channel nearly parallel to the coast of the United States. It then turns north-eastward into the mid-Atlantic, the larger proportion of it passing southward to the east of the Azores to swell the North African and Guinea Current created by the northerly winds off the Portuguese coast. The Guinea Current, which takes a southerly course, is divided into two on arriving at the region of the north-east trades, part of it flowing east to the Bight of Biafra and joining the South African feeder of the Main Equatorial, but the larger portion being carried westward into the North Equatorial drift. Rennel's Current, which is possibly a continuation of the Gulf-stream, enters the Bay of Biscay from the west, curves round its coast, and then turns north-west towards Cape Clear. The Arctic Current runs along the east coast of Greenland (being here called the Greenland Current), doubles Cape Farewell, and flows up towards Davis' Strait; it then turns to the south along the coasts of Labrador and the United States, from which it separates the Gulf-stream by a cold band of water. Immense masses of ice are borne south by this current from the Polar seas. In the interior

of the North Atlantic there is a large area comparatively free from currents, called the Sargasso Sea, from the large quantity of sea-weed (of the genus *Sargassum*) which drifts into it. A similar area exists in the South Atlantic. In the South Atlantic, the portion of the Equatorial Current which strikes the American coast below Cape St. Roque flows southward at the rate of from 12 to 20 miles a day along the Brazil coast under the name of the Brazil Current. It then turns eastward and forms the South Connecting Current, which, on reaching the South African coast, turns northward into the Main and Southern Equatorial Currents. Besides the surface currents, an under current of cold water flows from the poles to the equator, and an upper current of warm water from the equator towards the poles.

The greatest depth yet discovered is north of Porto Rico, in the West Indies, namely 27,360 feet. Cross-sections of the North Atlantic between Europe and America show that its bed consists of two great valleys lying in a north-and-south direction, and separated by a ridge, on which there is an average depth of 1600 or 1700 fathoms, while the valleys on either side sink to the depth of 3000 or 4000 fathoms. A ridge, called the *Wyville-Thomson Ridge*, with a depth of little more than 200 fathoms above it, runs from near the Butt of Lewis to Iceland, cutting off the colder water of the Arctic Ocean from the warmer water of the Atlantic. The South Atlantic, of which the greatest depth yet found is over 3000 fathoms, resembles the North Atlantic in having an elevated plateau or ridge in the centre with a deep trough on either side. The saltness and specific gravity of the Atlantic gradually diminish from the tropics to the poles, and also from within a short distance of the tropics to the equator. In the neighbourhood of the British Isles the salt has been stated at one thirty-eighth of the weight of the water. The North Atlantic is the greatest highway of ocean traffic in the world. It is also a great area of submarine communication, by means of the telegraphic cables that are laid across its bed.

Atlantic Telegraph. See *Telegraph*.

Atlan'tides (-dēz), a name given to the Pleiades, which were fabled to be the seven daughters of Atlas or of his brother Hesperus.

Atlan'tis, an island which, according to Plato, existed in the Atlantic over against the Pillars of Hercules (Straits of Gibraltar),

was the home of a great nation, and was finally swallowed up by the sea. The legend has been accepted by some as fundamentally true; but others have regarded it as the outgrowth of some early discovery of the New World.

Atlan'tosaurus, a gigantic fossil reptile, order Dinosauria, obtained in the upper Jurassic strata of the Rocky Mountains, attaining a length of 80 feet or more.

At'las, an extensive mountain system in North Africa, starting near Cape Nun on the Atlantic Ocean, traversing Morocco, Algiers, and Tunis, and terminating on the coast of the Mediterranean; divided generally into two parallel ranges, running w. to e., the Greater Atlas lying towards the Sahara and the Lesser Atlas towards the Mediterranean. The principal chain is about 1500 miles long, and the principal peaks rise above or approach the line of perpetual congelation; Miltin in Morocco being 11,400 feet high, and another peak in Morocco 11,500 feet high. The highest elevations are perhaps over 13,000 feet. Silver, antimony, lead, copper, iron, &c., are among the minerals. The vegetation is chiefly European in character, except on the low grounds and next the desert.

Atlas, in Greek mythology, the name of a Titan whom Zeus condemned to bear the vault of heaven.—The same name is given to a collection of maps and charts, and was first used by Gerard Mercator in the sixteenth century, the figure of Atlas bearing the globe being given on the title-pages of such works.

Atlas, in anatomy, is the name of the first vertebra of the neck, which supports the head. It is connected with the occipital bone in such a way as to permit of the nodding movement of the head, and rests on the second vertebra or *axis*, their union allowing the head to turn from side to side.

Atlas, a kind of silk or silk-satin fabric of eastern manufacture.

Atmidom'eter, an instrument for measuring the evaporation from water, ice, or snow. It somewhat resembles Nicholson's hydrometer, being constructed so as to float in water and having an upright graduated stem, on the top of which is a metal pan. Water, ice, or snow is put into the pan, so as to sink the zero of the stem to a level with the cover of the vessel, and as evaporation goes on the stem rises, showing the amount of evaporation in grains.

Atmom'eter, an instrument for measuring

the amount of evaporation from a moist surface in a given time. It is often a thin hollow ball of porous earthenware in which is inserted a graduated glass tube. The cavity of the ball and tube being filled with water and the top of the tube closed, the instrument is exposed to the free action of the air; the relative rapidity with which the water transuding through the porous substance is evaporated, is marked by the scale on the tube as the water sinks.

Atmosphere, primarily the gaseous envelope which surrounds the earth; but the term is applied to that of any orb. The atmosphere of the earth consists of a mass of gas extending to a height variously estimated at from 45 to 212 miles, and pressing on every part of the earth's surface with a pressure of about 15 (14·73) lbs. per square inch. The existence of this atmospheric pressure was first proved by Torricelli, who thus accounted for the rush of a liquid to fill a vacuum, and who, working out the idea, produced the first barometer. The average height of the mercurial column counterbalancing the atmospheric weight at the sea-level is a little less than 30 inches; but the pressure varies from hour to hour, and, roughly speaking, diminishes geometrically with the arithmetical increase in altitude. Of periodic variations there are two maxima of daily pressure occurring, when the temperature is about the mean of the day, and two minima, when it is at its highest and lowest respectively; but the problems of diurnal and seasonal oscillations have yet to be fully solved. The pressure upon the human body of average size is no less than 14 tons, but as it is exerted equally in all directions no inconvenience is caused by it. It is customary to take the atmospheric pressure as the standard for measuring other fluid pressures; thus the steam pressure of 30 lbs. per square inch on a boiler is spoken of as a pressure of two atmospheres.

The atmosphere, first subjected to analysis by Priestley and Scheele in the latter part of the eighteenth century, consists of a mixture of oxygen and nitrogen in the almost constant proportion of 20·81 volumes of oxygen to 79·19 volumes of nitrogen, or, by weight, 23·01 parts of oxygen to 76·99 of nitrogen. The gases are associated together, not as a chemical compound, but as a mechanical mixture. Upon the oxygen present depends the power of the atmosphere to support combustion and respiration, the nitrogen acting as a diluent to prevent

its too energetic action. Besides these gases, the air contains aqueous vapour in variable quantity, ozone, carbonic acid gas, traces of ammonia, and, in towns, sulphuretted hydrogen and sulphurous acid gas. After thunderstorms, nitric acid is also observable. In addition to its gaseous constituents the atmosphere is charged with minute particles of organic and inorganic matter.

Atmospheric electricity, the electricity manifested by the atmosphere, and made sensibly observable in the lightning flash.

Atmospheric Engine. See *Air-engine*.

Atmospheric Railway, so called in consequence of the motive power being derived from the pressure of the atmosphere, or from compressed air. The idea of thus obtaining motion was first suggested by the French engineer Papin, about 200 years ago. In 1810, and again in 1827, Mr. Medhurst published a scheme for 'propelling carriages through a close-fitting air-tight tunnel by forcing in air behind them;' and in 1825 a similar project was patented by Mr. Vallance of Brighton. About 1835 Mr. H. Pinkus, an American residing in England, patented a pneumatic railway. The carriages were to travel on an open line of rails, along which a cast-iron tube of between 3 and 4 feet diameter was to be laid, having a longitudinal slit from 1 to 2 inches wide and closed by a flexible valve along its upper side, through which a connection could be formed between the leading carriage and a piston working within the tube. This method was improved by Messrs. Clegg and Samuda, who in 1840 tried some experiments on a portion of the West London Railway with sufficient success to induce the government to advance a loan to the Dublin and Kingstown Railway Company, for the construction of a pneumatic line from Kingstown to Dalkey. It was opened for passenger traffic at the end of 1843, and was worked for many months. The London and Croydon Company subsequently obtained powers for laying down an atmospheric railway by the side of their other line from London to Croydon, and in experimental trips in 1845 a speed of 30 miles an hour was obtained with sixteen carriages, and of 70 miles with six carriages. But during the intense heat of the summer of 1846 the iron tube frequently became so hot as to melt the composition which sealed the valve, and the line had to be worked by locomotives. The mechanical difficulty of commanding a sufficient amount of rarefac-

tion led to the abandonment of the system for railway purposes. It has been revived, however, for the conveyance of letters and parcels in towns by means of tubes of moderate diameter laid beneath the streets. See *Pneumatic Despatch*.

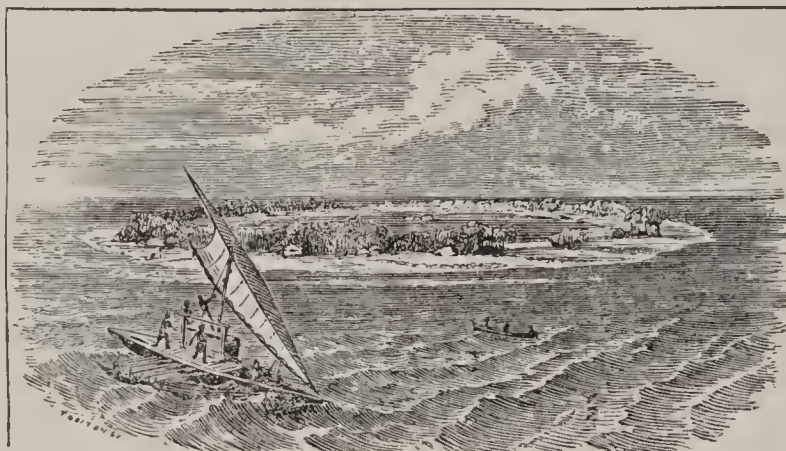
Atoll', the Polynesian name for coral islands of the ringed type inclosing a lagoon in the centre. They are found chiefly in the Pacific in archipelagos, and occasionally are of large size. Suadiva Atoll is 44 miles by 34; Rimsky is 54 by 20. See *Coral*.

Atomic Theory, a theory as to the existence and properties of atoms (see *Atoms*); especially, in chemistry, the theory accounting for the fact that in compound bodies the elements combine in certain constant proportions, by assuming that all bodies are composed of ultimate atoms, the weight of

which is different in different kinds of matter. It is associated with the name of Dalton, who systematized and extended the imperfect results of his predecessors. On its practical side the atomic theory asserts three *Laws of Combining Proportions*: (1) The Law of Constant or Definite Proportions, teaching that in every chemical compound the nature and proportion of the constituent elements are definite and invariable; thus water invariably consists of 8 parts by weight of oxygen to 1 part by weight of hydrogen; (2) The Law of Combination in Multiple Proportions, according to which the several proportions in which one element unites with another invariably bear towards each other a simple relation; thus 1 part by weight of hydrogen unites with 8 parts by weight of oxygen to form water, and with 16 parts (*i.e.* 8×2) parts of oxygen to form peroxide of hydrogen; (3) The Law of Combination in Reciprocal Proportions, that the proportions in which two elements combine with a third also represent the proportions in which, or in some simple multiple of which, they will themselves combine; thus in olefiant gas hydrogen is present with carbon in the pro-

portion of 1 to 6, and in carbonic oxide oxygen is present with carbon in the proportion of 8 to 6, 1 to 8 being also the proportions in which hydrogen and oxygen combine with each other. The theory that these *proportional numbers* are, in fact, nothing else but the relative weights of atoms so far accounts for the phenomena that the existence of these laws might have been predicted by the aid of the atomic hypothesis long before they were actually discovered by analysis. In themselves, however, the laws do not prove the theory of the existence of ultimate particles of

matter of a certain relative weight; and although many chemists, even without expressly adopting the atomic theory itself, have followed Dalton in the use of the terms *atom* and *atomic weight*, in preference to *pro-*



Bird's-eye View of an Atoll.

portion, combining proportion, equivalent, and the like, yet in using the word *atom* it should be held in mind that it merely denotes the proportions in which elements unite. These will remain the same whether the atomic hypothesis which suggested the employment of the term be true or false. Dalton supposed that the atoms of bodies are spherical, and invented certain symbols to represent the mode in which he conceived they might combine together.

Atomists. See *Atoms*.

Atoms, according to the hypothesis of some philosophers, the primary parts of elementary matter not further divisible. The principal theorists of antiquity upon the nature of atoms were Moschus of Sidon, Leucippus (510 B.C.), Democritus, Epicurus, and Lucretius. These philosophers explained all phenomena on the theory of the existence of atoms possessing various properties and motions, and are hence sometimes called *Atomists*. Among the moderns, Gassendi illustrated the doctrine of Epicurus. Descartes formed from this his system of the vortices. Newton and Boerhaave supposed that the original matter consists of hard,

ponderable, impenetrable, inactive, and immutable particles, from the variety in the composition of which the variety of bodies originates. According to Boscovich every atom is an indivisible point possessing position, mass, and potential force or capacity for attraction and repulsion. Upon the discovery of Helmholtz that a vortex in a perfect liquid possesses certain permanent characteristics, Sir W. Thomson has based a theory that atoms are vortices in a homogeneous, incompressible, and frictionless fluid. As to chemical atoms, see *Atomic Theory*.

Atonement, in Christian theology, the expiation of sin by the obedience and personal sufferings of Christ. The first explicit exposition of the evangelical doctrine of the atonement is ascribed to Anselm, Archbishop of Canterbury, in 1093.

Atrato (à-trä'tō), a river of S. America, in the north-west of Colombia, emptying itself by nine mouths into the Gulf of Darien; it is navigable by steamers of some size for 250 miles, and has long been the subject of schemes for establishing water-communication between the Atlantic and Pacific.

Atrauli, a town of India, N. W. Provinces, Aligarh district, clean, well built, and with a good trade. Pop. 14,374.

Atreb'ates, ancient inhabitants of that part of Gallia Belgica afterwards called *Artois*. A colony of them settled in Britain, in a part of Berkshire and Oxfordshire.

At'rek, a river of Asia, forming the boundary between Persia and the Russian Transcaspian territory, and flowing into the Caspian; length 250 miles.

Atreus (at'rūs), in Greek mythology, a son of Pelops and Hippodamia, grandson of Tantälus and progenitor of Agamemnon. He succeeded Eurystheus, his father-in-law, as king of Mycēnæ, and in revenge for the seduction of his wife by his brother Thyestes gave a banquet at which the latter partook of the flesh of his own sons. Atreus was killed by Ægisthus, a son of Thyestes. The tragic events connected with this family furnished materials to some of the great Greek dramatists.

At'riplex, a genus of plants, nat. order Chenopodiaceæ. See *Orache*.

A'trium, the entrance-hall and most important apartment of a Roman house, generally ornamented with statues, family portraits, and other pictures, and forming the reception-room for visitors and clients. It

was lighted by the *compluvium*, an opening in the roof, towards which the roof sloped so as to throw the rain-water into a cistern in the floor called the *impluvium*.

In zoology the term is applied to the large chamber or 'cloaca' into which the intestine opens in the Tunicata.

At'ropa, the nightshade genus of plants. See *Belladonna*.

At'rophy, a wasting of the flesh due to some interference with the nutritive processes. It may arise from a variety of causes, such as permanent, oppressive, and exhausting passions, organic disease, a want of proper food or of pure air, suppurations in important organs, copious evacuations of blood, saliva, semen, &c., and it is also sometimes produced by poisons, for example arsenic, mercury, lead, in miners, painters, gilders, &c. In old age the whole frame except the heart undergoes atrophic change, and it is of frequent occurrence in infancy as a consequence of improper, unwholesome food, exposure to cold, damp, or impure air, &c. Single organs or parts of the body may be affected irrespective of the general state of nutrition; thus local atrophy may be superinduced by palsies, the pressure of tumours upon the nerves of the limbs, or by artificial pressure, as in the feet of Chinese ladies.

At'ropin, **At'ropine**, a crystalline alkaloid obtained from the deadly nightshade (*Atropa Belladonna*). It is very poisonous, and produces persistent dilatation of the pupil.

At'ropos, the eldest of the Fates, who cuts the thread of life with her shears.

Attaché (at'a-shā), a junior member of the diplomatic service attached to an embassy or legation.

Attachment, in law, the taking into the custody of the law the person or property of one already before the court, or of one whom it is sought to bring before it.—*Attachment of person*. A writ issued by a court of record, commanding the sheriff to bring before it a person who has been guilty of contempt of court, either in neglect or abuse of its process or of subordinate powers.—*Attachment of property*. A writ issued at the institution or during the progress of an action, commanding the sheriff or other proper officer to attach the property, rights, credits, or effects of the defendant to satisfy the demands of the plaintiff. The laws and practice concerning the attachment vary in different States.—An *attachment of privilege*, in English

law, is a process by which a man, by virtue of his privilege, calls another to litigate in that court to which he himself belongs, and who has the privilege to answer there.

Attack', the opening act of hostility by a force seeking to dislodge an enemy from its position. It is considered more advantageous to offer than to await attack, even in a defensive war. The historic forms of attack are: 1. The parallel; 2. The form in which both the wings attack and the centre is kept back; 3. The form in which the centre is pushed forward and the wings kept back; 4. The famous oblique mode, dating at least from Epaminondas, and employed by Frederick the Great, where one wing advances to engage, whilst the other is kept back, and occupies the attention of the enemy by pretending an attack. Napoleon preferred to mass heavy columns against an enemy's centre. The forms of attack have changed with the weapons used. In the days of the pike heavy masses were the rule, but the use of the musket led to an extended battle-front to give effect to the fire. The nature of the attack depends upon the condition and position of the enemy, upon the purpose of the war, upon the time, place, and other circumstances.

Attain'der, the legal consequences of a sentence of death or outlawry pronounced against a person for treason or felony, the person being said to be *attainted*. It resulted in forfeiture of estate and 'corruption of blood,' rendering the party incapable of inheriting property or transmitting it to heirs; but these results now no longer follow. Attainder is scarcely known at present in the laws of the United States; the term is of rare occurrence in our laws.

Attaint', a writ at common law against a jury for a false verdict, never adopted in the United States.

Attale'a, a genus of American palms, comprising the piassava palm, which produces coquilla nuts.

Att'alus, the names of three kings of ancient Pergamus, 241-133 B.C., the last of whom bequeathed his kingdom to the Romans. They were all patrons of art and literature.

At'tar, in the East Indies, a general term for a perfume from flowers; in Europe generally used only of the *attar* or *otto* of roses, an essential oil made from *Rosa centifolia*, the hundred-leaved or cabbage-rose, *R. damascēna* or damask-rose, *R. moschāta* or musk-rose, &c., 100,000 roses yielding

only 180 grains of attar. Cashmere, Shiraz, and Damascus are celebrated for its manufacture, and there are extensive rose farms in the valley of Kezanlik in Roumelia and at Ghazipur in Benares. The oil is at first greenish, but afterwards it presents various tints of green, yellow, and red. It is concrete at all ordinary temperatures, but becomes liquid 'about 84° Fahr. It consists of two substances, a hydrocarbon and an oxygenated oil, and is frequently adulterated with the oils of rhodium, sandal-wood, and geranium, with the addition of camphor or spermaceti.

Atten'uation, in brewing, the change which takes place in the saccharine wort during fermentation by the conversion of sugar into alcohol and carbonic acid, with diminution of specific gravity.

At'terbury, FRANCIS, an English prelate, born in 1662, and educated at Westminster and Oxford. In 1687 he took his degree of M.A., and appeared as a controversialist



Bishop Atterbury.

in a defence of the character of Luther, entitled, *Considerations on the Spirit of Martin Luther*, &c. He also assisted his pupil, the Hon. Mr. Boyle, in his famous controversy with Bentley on the Epistles of Phalaris. Having taken orders in 1691 he settled in London, became chaplain to William and Mary, preacher of Bridewell, and lecturer of St. Bride's. Controversy was congenial to him, and in 1706 he commenced one with Dr. Wake, which lasted four years, on the rights, privileges, and powers of convocations. For this service he received the thanks of the lower house

of convocation and the degree of Doctor of Divinity from Oxford. Soon after the accession of Queen Anne he was made Dean of Carlisle, aided in the defence of the famous Sacheverell, and wrote *A Representation of the Present State of Religion*. In 1712 he was made Dean of Christ Church, and in 1713 Bishop of Rochester and Dean of Westminster. After the death of the queen in 1714 he distinguished himself by his opposition to George I.; and having entered into a correspondence with the Pretender's party was apprehended in August, 1722, and committed to the Tower. Being banished the kingdom, he settled in Paris, where he chiefly occupied himself in study and in correspondence with men of letters. But even here, in 1725, he was actively engaged in fomenting discontent in the Scottish Highlands. He died in 1731, and his body was privately interred in Westminster Abbey. His sermons and letters are marked by ease and grace; but as a critic and a controversialist he is rather dexterous and popular than accurate and profound.

Attic, an architectural term variously used. An *Attic base* is a peculiar kind of base, used by the ancient architects in the Ionic order and by Palladio and some others in the Doric. An *Attic story* is a low story in the upper part of a house rising above the main portion of the building. In ordinary language an attic is an apartment lighted by a window in the roof.

At'tica, a state of ancient Greece, the capital of which, Athens, was once the first city in the world. The territory was triangular in shape, with Cape Sunium (Colonna) as its apex and the ranges of Mounts Cithæron and Parnes as its base. On the north these ranges separated it from Bœotia; on the west it was bounded by Megaris and the Saronic Gulf; on the east by the Ægean. Its most marked physical divisions consisted of the highlands, midland district, and coast district, with the two famous plains of Eleusis and of Athens. The Cephissus and Ilissus, though small, were its chief streams; its principal hills, Cithæron, Parnes, Hymettus, Pentelicus, and Laurium. Its soil has probably undergone considerable deterioration, but was fertile in fruits, and especially of the olive and fig. These are still cultivated as well as the vine and cereals, but Attica is better suited for pasture than tillage. According to tradition the earliest inhabitants of Attica lived in a savage manner until the time of Cecrops, who

came, B.C. 1550, with a colony from Egypt, taught them all the essentials of civilization, and founded Athens. One of Cecrops' descendants founded eleven other cities in the regions round, and there followed a period of mutual hostility. To Theseus is assigned the honour of uniting these cities in a confederacy, with Athens as the capital, thus forming the Attic state. After the death of Codrus, B.C. 1068, the monarchy was abolished, and the government vested in archons elected by the nobility, at first for life, in 752 B.C. for ten years, and in 683 B.C. for one year only. The severe constitution of Draco was succeeded in 594 by the milder code of Solon, the democratic elements of which, after the brief tyranny of the Pisistratids, were emphasized and developed by Clisthenes. He divided the people into ten classes, and made the senate consist of 500 persons, establishing as the government an oligarchy modified by popular control. Then came the splendid era of the Persian war, which elevated Athens to the summit of fame. Miltiades at Marathon and Themistocles at Salamis conquered the Persians by land and by sea. The chief external danger being removed the rights of the people were enlarged; the archons and other magistrates were chosen from all classes without distinction. The period from the Persian war to the time of Alexander (B.C. 500 to 336) was most remarkable for the development of the Athenian constitution. Attica appears to have contained a territory of nearly 850 square miles, with some 500,000 inhabitants, 360,000 of whom were slaves, while the inhabitants of the city numbered 180,000. Cimon and Pericles (B.C. 444) raised Athens to its point of greatest splendour, though under the latter began the Peloponnesian war, which ended with the conquest of Athens by the Lacedæmonians. The succeeding tyranny of the Thirty, under the protection of a Spartan garrison, was overthrown by Thrasybulus, with a temporary partial restoration of the power of Athens; but the battle of Cheronæa (B.C. 338) made Attica, in common with the rest of Greece, a dependency of Macedon. The attempts at revolt after the death of Alexander were crushed, and in 260 B.C. Attica was still under the sway of Antigonus Gonatas, the Macedonian king. A period of freedom under the shelter of the Achæan League then ensued, but their support of Mithridates led in B.C. 146 to the subjugation of the Grecian states by Rome. After

the division of the Roman Empire Attica belonged to the empire of the East until in A.D. 396 it was conquered by Alaric the Goth and the country devastated. Attica, along with the ancient Bœotia, now forms a nome or province (Attike and Viotia) of the Kingdom of Greece, with a pop. (1889) of 257,764.

Atticus, **TITUS POMPONIUS**, a Roman of great wealth and culture, born 109 B.C., and died 32 B.C. On the death of his father he removed to Athens to avoid participation in the civil war, to which his brother Sulpicius had fallen a victim. There he so identified himself with Greek life and literature as to receive the surname Atticus. It was his principle never to mix in politics, and he lived undisturbed amid the strife of factions. Sulla and the Marian party, Cæsar and Pompey, Brutus and Antony, were alike friendly to him, and he was in favour with Augustus. Of his close friendship with Cicero proof is given in the series of letters addressed to him by Cicero. He married at the age of 53, and had one daughter, Pomponia, named by Cicero Atticula and Attica. He reached the age of seventy-seven years without sickness, but being then attacked by an incurable disease, ended his life by voluntary starvation. He was a type of the refined Epicurean, and an author of some contemporary repute, though none of his works have reached us.—The name Atticus was given to Addison by Pope, in a well-known passage (Prologue to the Satires addressed to Dr. Arbuthnot).

Attila (in German, *Etzel*), the famous leader of the Huns, was the son of Mundzuk, and the successor, in conjunction with his brother Bleda, of his uncle Rhuas. The rule of the two leaders extended over a great part of northern Asia and Europe, and they threatened the Eastern Empire, and twice compelled the weak Theodosius II. to purchase an inglorious peace. Attila caused his brother Bleda to be murdered (444), and in a short time extended his dominion over all the peoples of Germany and exacted tribute from the eastern and western emperors. The Vandals, the Ostrogoths, the Gepidæ, and a part of the Franks united under his banners, and he speedily formed a pretext for leading them against the Empire of the East. He laid waste all the countries from the Black to the Adriatic Sea, and in three encounters defeated the Emperor Theodosius, but could not take Constantinople.

Thrace, Macedonia, and Greece all submitted to the invader, who destroyed seventy flourishing cities; and Theodosius was obliged to purchase a peace. Turning to the west, the 'scourge of God,' as the universal terror termed him, crossed with an immense army the Rhine, the Moselle, and the Seine, came to the Loire, and laid siege to Orleans. The inhabitants of this city repelled the first attack, and the united forces of the Romans under Aetius, and of the Visigoths under their king Theodoric, compelled Attila to raise the siege. He retreated to Champagne, and waited for the enemy in the plains of Chalons. In apparent opposition to the prophecies of the soothsayers the ranks of the Romans and Goths were broken; but when the victory of Attila seemed assured the Gothic prince Thorismund, the son of Theodoric, poured down from the neighbouring height upon the Huns, who were defeated with great slaughter. Rather irritated than discouraged, he sought in the following year a new opportunity to seize upon Italy, and demanded Honoria, the sister of Valentinian III., in marriage, with half the kingdom as a dowry. When this demand was refused he conquered and destroyed Aquileia, Padua, Vicenza, Verona, and Bergamo, laid waste the plains of Lombardy, and was marching on Rome when Pope Leo I. went with the Roman ambassadors to his camp and succeeded in obtaining a peace. Attila went back to Hungary, and died on the night of his marriage with Hilda or Ildico (453), either from the bursting of a blood-vessel or by her hand. The description that Jornandes has left us of him is in keeping with his Kalmuck-Tartar origin. He had a large head, a flat nose, broad shoulders, and a short and ill-formed body; but his eyes were brilliant, his walk stately, and his voice strong and well-toned.

Attleborough, a manufacturing town of the U. States, in Massachusetts. Pop. 1890, 7577. See *North Attleborough*.

Attock, a town and fort in Rawal Pindi district, Punjab, overhanging the Indus at the point where it is joined by the Kabul river. It is at the head of the steam navigation of the Indus, and is connected with Lahore by railway. It is an important post on the military road to the frontier. Pop. 4210.

Attorney, a person appointed to do something for and in the stead and name of another. An attorney may have *general*

powers to act for another; or his power may be *special*, and limited to a particular act or acts. A special attorney is appointed by a deed called a *power* or *letter of attorney*, specifying the acts which he is authorized to do. An *attorney at law* is a person qualified to appear for another before a court of law to prosecute or defend any action on behalf of his client. The rules and qualifications, whereby one is authorized to practise as an attorney in any court, are very different in different countries, and in the different courts of the same country. There are various statutes on this subject in the laws of the several States, and almost every court has certain rules, a compliance with which is necessary, in order to authorize any one to appear in court for, and represent any party to a suit, without special authority under seal. Women are now admitted as practising attorneys.

Attorney-general, in England and Ireland, the first law-officer and legal adviser of the crown, acting on its behalf in its revenue and criminal proceedings, carrying on prosecutions in crimes that have a public character, guarding the interests of charitable endowments, and granting patents. He is *ex officio* the leader of the bar, and, as a member of Parliament, has charge of all government measures on legal questions. The solicitor-general holds a similar position, and may act in his place. In the U. States the attorney-general is a member of the cabinet and the head of the department of justice. The individual states have also attorneys-general.

Attrac'tion, the tendency of all material bodies, whether masses or particles, to approach each other, to unite, and to remain united. It was Newton that first adopted the theory of a universal attractive force, and determined its laws. When bodies tend to come together from sensible distances the tendency is termed either the attraction of *gravitation*, *magnetism*, or *electricity*, according to circumstances; when the attraction operates at insensible distances it is known as *adhesion* with respect to surfaces, as *cohesion* with respect to the particles of a body, and as *affinity* when the particles of different bodies tend together. It is by the attraction of gravitation that all bodies fall to the earth when unsupported.

Attrek. See *Atrek*.

At'tribute, in philosophy, a quality or

property of a substance, as whiteness or hardness. A substance is known to us only as a congeries of attributes.

In the fine arts an attribute is a symbol regularly accompanying and marking out some personage. Thus the caduceus, purse, winged hat, and sandals are attributes of Mercury, the trampled dragon of St. George.

Attwood, GEORGE, F.R.S., an English mathematician, born 1745, died 1807, best known by his invention, called after him *Attwood's Machine*, for verifying the laws of falling bodies. It consists essentially of a freely moving pulley over which runs a fine cord with two equal weights suspended from the ends. A small additional weight is laid upon one of them, causing it to descend with uniform acceleration. Means are provided by which the added weight can be removed at any point of the descent, thus allowing the motion to continue from this point onward with uniform velocity.

Atys, ATTYS (at'is), in classical mythology, the shepherd lover of Cybèle, who, having broken the vow of chastity which he made her, castrated himself. In Asia Minor Atys seems to have been a deity, with somewhat of the same character as Adonis.

Aubagne (ō-bān-yé), town in France, department of Bouches-du-Rhône, with manufactures of cottons, pottery, cloth. Pop. 7660.

Aubaine, DROIT D' (drwä dō-bān). See *Droit d'Aubaine*.

Aube (ōb), a north-eastern French department; area, 2351 sq. m.; pop. 257,374. The surface is undulating, and watered by the Aube, &c. The N. and N.W. districts are bleak and infertile, the southern districts remarkably fertile. A large extent of ground is under forests and vineyards, and the soil is admirable for grain, pulse, and hemp. The chief manufactures are worsted and hosiery. Troyes is the capital.—The river Aube, which gives name to the department, rises in Haute-Marne, flows N.W., and after a course of 113 miles joins the Seine.

Aubenas (ōb-nä), a town of France, dep. Ardèche, with a trade in coal, silk, &c. Pop. 5356.

Auber (ō-bār), DANIEL FRANÇOIS ESPRIT, a French operatic composer; born 1782, at Caen, in Normandy; died at Paris 1871. He was originally intended for a mercantile career, but devoted himself to music, studying under Cherubini. His first great success was his opera *La Bergère Châtelaine*, produced in 1820. In 1822 he had asso-

ciated himself with Scribe as librettist, and other operas now followed in quick succession. Chief among them were *Masaniello* or *La Muette de Portici* (1828), *Fra Diavolo* (1830), *Lestocq* (1834), *L'Ambassadrice* (1836), *Le Domino Noir* (1837), *Les Diamants de la Couronne* (1841), *Marco Spada* (1853), *La Fiancée du Roi de Garbe* (1864). Despite his success in *Masaniello*, his peculiar field was comic opera, in which his charming melodies, bearing strongly the stamp of the French national character, his uniform grace and piquancy, won him a high place.

Aubervilliers (ō-bār-vēl-yā), a suburban locality of Paris, with a fort belonging to the defensive works of the city. Pop. 20,000.

Aubigné, MERLE D'. See *Merle d'Aubigné*.

Aubin (ō-ban), a town of Southern France, department of Aveyron, 20 miles N.E. of Villefranche; mining district: coal, sulphur, alum, and iron. Pop. 8835.

Au'brey, JOHN, F.R.S., an English antiquary, born in Wiltshire in 1625 or 1626, died about 1700. He was educated at Oxford; collected materials for the *Monasticon Anglicanum*, and afforded important assistance to Wood, the antiquary. He left large collections of manuscripts, which have been used by subsequent writers. His *Miscellanies* (London, 1696) contain much curious information, but display credulity and superstition. His *Natural History and Antiquities of the County of Surrey* was published in 1719.

Au'burn, the name of many places in America, the chief being a handsome city of New York state, at the N. end of Owasco Lake. It is chiefly famous for its state prison, large enough to receive 1000 prisoners. In the town or vicinity various manufactures are carried on. Pop. 25,858. —Another Auburn is in Maine, on the Androscoggin river, a manufacturing town; pop. 11,250.

Aubusson (ō-bū-sōn), a town of the interior of France, dep. Creuse, celebrated for its carpets. Pop. 6723.

Aubusson (ō-bū-sōn), PIERRE D', grand-master of the knights of St. John of Jerusalem, born in 1423 of a noble French family, served in early life against the Turks, then entered the order of St. John, obtained a commandery, was made grand-prior, and in 1476 succeeded the Grand-master Orsini. In 1480 the island of Rhodes, the headquarters of the order, was invaded by a

Turkish army of 100,000 men. The town was besieged for two months and then assaulted, but the Turks were obliged to retire with great loss. He died at Rhodes in 1503.

Auchmuty, COLONEL RICHARD T., philanthropist, came of Scottish ancestry. In the American civil war he was appointed adjutant-general of volunteers. He earned a justly deserved reputation for his philanthropic movement in establishing trade-schools; among others the New York Trade School, for which he donated one hundred and sixty thousand dollars. Few men have accomplished so much for the cause of industrial education. He died July 18, 1893.

Auck'land, a town of New Zealand, in the North Island, founded in 1840, and situated on Waitemata Harbour, one of the finest harbours of New Zealand, where the island is only 6 miles across, there being another harbour (Manukau) on the opposite side of the isthmus. At dead low water there is sufficient depth in the harbour for the largest steamers. The working ship channel has an average depth of 36 feet, and varies in width from 1 to 2 miles. The harbour has two good entrances, with lighthouse; and is defended by batteries. There are numerous wharves and jetties, and a couple of graving-docks, one of which—the Calliope Dock, opened in 1887—is one of the largest in the whole of the Southern Seas. Its site is picturesque, the streets are spacious, and the public buildings—churches, educational establishments, including a university college—are numerous and handsome. It has a large and increasing trade, there being connection with the chief places on the island by rail, and regular communication with the other ports of the colony, Australia, and Fiji by steam. It was formerly the capital. In 1891, pop., including suburbs, 51,127.—The provincial district of Auckland forms the northern part of North Island, with an area of 25,746 sq. miles; pop. 133,159. The surface is very diversified; volcanic phenomena are common, including geysers, hot lakes, &c.; rivers are numerous; wool, timber, kauri-gum, &c., are exported. Much gold has been obtained in the Thames valley and elsewhere.

Auckland, WILLIAM EDEN, LORD, an English statesman, born 1744; educated at Eton and Oxford, called to the bar 1768, under-secretary of state 1772, and in 1776 lord of trade. In 1778 he was nominated

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in conjunction with Lord Howe and others to act as a mediator between Britain and the insurgent American colonies. He was afterwards secretary of state for Ireland, ambassador extraordinary to France, ambassador extraordinary to the Netherlands, &c. He was raised to the peerage in 1788, and died in 1814.

Auckland Islands, a group of islands about 180 miles s. of New Zealand, discovered in 1806, and belonging to Britain. They are of volcanic origin and fertile; and the largest, which is 30 miles by 15, has two good harbours. No settled inhabitants.

Auction is a public sale to the party offering the highest price where the buyers bid upon each other, or to the bidder who first

accepts the terms offered by the vendor where he sells by reducing his terms until some one accepts them. The latter form is known as a *Dutch Auction*. A sale by auction must be conducted in the most open and public manner possible; and there must be no collusion on the part of the buyers. Puffing or mock bidding to raise the value by apparent competition is illegal.

Auctioneer', a person who conducts sales by auction. It is his duty to state the conditions of sale, to declare the respective biddings, and to terminate the sale by *knocking down* the thing sold to the highest bidder. In the United States, generally, an auctioneer must have a license, renewable annually. Verbal declarations by an auc-



tioneer are not suffered to control the printed conditions of sale.

Au'cuba, a genus of plants, order Cornaceæ, one species of which, *A. japonica*, a laurel-like shrub with spotted leaves, a native of Japan and China, is now common in ornamental grounds in Europe. The flowers are diœcious and inconspicuous. For a long time only the female plant was cultivated, but latterly the male has been introduced, and the fruit, which consists of beautiful coral-red berries, is now frequently developed, and adds greatly to the attractiveness of the plant. *A. himalaica*, also brought to Europe, is less hardy.

Aude (ōd), a maritime department in the s. of France; area, 2437 sq. miles; mainly covered by hills belonging to the Pyrenees or the Cevennes, and traversed w. to e. by a valley drained by the Aude. The loftier districts are bleak and unproductive; the others tolerably fertile, yielding good crops of grain. The wines, especially white, bear

a good name; olives and other fruits are also cultivated. The manufactures are varied; the trade is facilitated by the Canal du Midi. Carcassonne is the capital; other towns are Narbonne and Castelnaudary. Pop. 317,372. —The river Aude rises in the Eastern Pyrenees, and flowing nearly parallel to the canal du Midi falls into the Mediterranean, after a course of 130 miles.

Audebert (ōd-bār), JEAN BAPTISTE, French engraver and naturalist, born in 1759, died in 1800; published *Histoire Naturelle des Singes, des Makis, et des Galéopithèques*; *Histoire des Colibris*, &c.; and began *Histoire des Grimpereaux et des Oiseaux de Paradis*, finished by Desray—all finely illustrated works.

Au'diphone, an acoustic instrument by means of which deaf persons are enabled to hear. It consists essentially of a fan-shaped plate of hardened caoutchouc, which is bent to a greater or less degree by strings, and is very sensitive to sound-waves. When

used the up edge is pressed against the upper front teeth, with the convexity outward, and the sounds being collected are conveyed from the teeth to the auditory nerve without passing through the external ear.

Au'dit, an examination into accounts or dealings with money or property, along with vouchers or other documents connected therewith, especially by proper officers, or persons appointed for the purpose. Also the occasion of receiving the rents from the tenants on an estate.

Au'ditor, in general practice, an officer of the court appointed to state items of debit and credit between parties in suits when accounts are in question, and show balances. He may be appointed by courts of either law or equity (in the latter case called master or examiner), at common law in actions of account, and in many States, by special statute, in other actions.

Auditory Nerves. See *Ear*.

Audran (ō-drän), GERARD, a celebrated French engraver, born 1640; studied at Rome, was appointed engraver to Louis XIV.; died at Paris 1703. He engraved Le Brun's Battles of Alexander, two of Raphael's cartoons, Poussin's Coriolanus, &c., and takes a first place among historical engravers. Other members of the family were successful in the same profession: Benoît, 1661-1721; Claude *père*, 1592-1677; Claude *fils*, 1640-84, Germain, 1631-1710; Jean, 1667-1756.

Au'dubon, JOHN JAMES, an American naturalist of French extraction, born near New Orleans in 1780, was educated in France, and studied painting under David. In 1798 he settled in Pennsylvania, but having a great love for ornithology he set out in 1810 with his wife and child, descended the Ohio, and for many years roamed the forests in every direction drawing the birds which he shot. In 1826 he went to England, exhibited his drawings in Liverpool, Manchester, and Edinburgh, and finally published them in an unrivalled work of double-folio size, with 435 coloured plates of birds the size of life (*The Birds of America*, 4 vols., 1827-39), with an accompanying text (*Ornithological Biography*, 5 vols. 8vo, partly written by Prof. Macgillivray). On his final return to America he laboured with Dr. Bachman on a finely illustrated work entitled *The Quadrupeds of America* (1843-50, 3 vols.). He died at New York in 1851.

Auerbach, a manufacturing town of Germany, kingdom of Saxony. Pop. 6258.

Auerbach (ou'ér-bäh), BERTHOLD, a distinguished German author of Jewish extraction, born 1812, died 1882. He abandoned the study of Jewish theology in favour of philosophy, publishing in 1836 his *Judaism and Modern Literature*, and a translation of the works of Spinoza with critical biography (5 vols. 1841). His later works were tales or novels, and his *Village Tales of the Black Forest* (*Schwarzwälder Dorfgeschichten*) as well as others of his writings have been translated into several languages. Other works: *Barfüssele*; *Joseph im Schnee*; *Edelweiss*; *Auf der Höhe*; *Das Landhaus am Rhein*; *Waldfried*; *Brigitta*.

Auerstädt (ou'ér-stet), battle at, Oct. 14, 1806. See *Jena*.

Augeas (a-jé'as), a fabulous king of Elis, in Greece, whose stable contained 3000 oxen, and had not been cleaned for thirty years. Hercules undertook to clear away the filth in one day in return for a tenth part of the cattle, and executed the task by turning the river Alphēus through it. Augeas, having broken the bargain, was deposed and slain by Hercules.

Auger (a'gèr), an instrument for boring holes considerably larger than those bored by a gimlet, used by carpenters and joiners, ship-wrights, &c.

Augereau (ōzh-rō), PIERRE FRANÇOIS CHARLES, Duke of Castiglione, Marshal of France, son of a mason, born at Paris 1757. He adopted the life of a soldier, and by 1796 had reached the rank of general of division in the army of Italy. At Casale, Lodi, Castiglione, and Arcole, he highly distinguished himself. In 1797 he was at Paris, and was the instrument of the *coup d'état* of the 18th of Fructidor (4th Sept.). In 1799 he was chosen a member of the Council of Five Hundred. He then obtained the command of the army in Holland, and fought till the end of the campaign. In 1803 he was appointed to lead the army collected at Bayonne against Portugal. In 1804 he was named marshal of the empire, and grand officer of the Legion of Honour. He subsequently took part in the battles of Jena and Eylau, held a command in Spain, and in July, 1813, led the army in Bavaria against Saxony, taking part in the battle of Leipzig. On Napoleon's abdication he submitted to Louis XVIII., who named him a peer. He died in 1816.

Augier (ō-zhi-ā), EMILE, a noted French

dramatist, born 1822, came young to Paris, entered a lawyer's office, but relinquished law for literature; elected an academician in 1857, in 1868 a commander of the Legion of Honour. His first and one of his best dramas was the comedy *La Ciguë* (1844); among his other works are *L'Aventurière*, *Gabrielle*, *Paul Forestier*, *Le Mariage d'Olympe*, *Le Gendre de M. Poirier*, *Les Effrontés*, *Le Fils de Giboyer*, *Les Lions et les Renards*, *Maître Guérin*, *Les Fourchambault*, &c. Died in 1889.

Augite (a'jīt), or PYROXENE, a mineral of the hornblende family, an essential component of many igneous rocks, such as basalt, greenstone, and porphyry. When crystallized it assumes the form of short, slightly rhombic prisms, with their lateral edges replaced, and terminated at one or both extremities by numerous planes. Its specific gravity is from 3.19 to 3.52; lustre vitreous; hardness sufficient to scratch glass. It has many varieties, diopside, sahlite, malacolite, coccolite, &c., but is composed essentially of silica, lime, and magnesia. It may be imitated by the artificial fusion of its constituents. A transparent green variety found at Zillerthal, in the Tyrol, is used in jewelry.

Augsburg (ougz'burh; Lat. *Augusta Vindelicorum*), a city of Bavaria, at the junction of the Wertach and Lech, antique in appearance, but with some fine streets, squares, and handsome or interesting buildings, including a splendid town-hall, a lofty belfry (Perlach Tower), cathedral, with paintings by Domenichino, Holbein, &c.; St. Ulrich's Church; the bishop's palace, where the Augsburg Confession was presented to the diet, now a royal residence; the Fugger Palace, or mansion of the celebrated Fugger family, the public library, the theatre, the Academy of Arts, and the Fuggerrange of alms-houses. Augsburg was a renowned commercial centre in the middle ages, and is still an important emporium of South German and Italian trade; industries: cotton spinning and weaving, dyeing, woollen manufacture, machinery and metal goods, books and printing, chemicals, &c. The Emperor Augustus established a colony here about 12 B.C. In 1276 it became a free city, and besides being a great mart for the commerce between the north and south of Europe, it was a great centre of German art in the middle ages. It early took a conspicuous part in the Reformation. (See next art.) In 1806 it was incorporated in Bavaria. Pop. 1890, 75,629.

Augsburg Confession, a document which was presented by the Protestants at the Diet of Augsburg, 1530, to the Emperor Charles V. and the diet, and being signed by the Protestant states was adopted as their creed. Luther made the original draught; but as its style appeared too violent it was given to Melanchthon for amendment. The original is to be found in the imperial Austrian archives. Afterwards Melanchthon arbitrarily altered some of the articles, and there arose a division between those who held the original and those who held the altered Augsburg Confession. The former is received by the Lutherans, the latter by the German Reformed.

Au'gurs, a board or college of diviners who, amongst the Romans, predicted future events and announced the will of the gods from the occurrence of certain signs. These consisted of signs in the sky, especially thunder and lightning; signs from the flight and cries of birds; from the feeding of the sacred chickens; from the course taken or sounds uttered by various quadrupeds or by serpents; from accidents or occurrences, such as spilling the salt, sneezing, &c. The answers of the augurs as well as the signs by which they were governed were called *auguries*, but bird-predictions were properly termed *auspices*. Nothing of consequence could be undertaken without consulting the augurs, and by the mere utterance of the words *alio die* ('meet on another day') they could dissolve the assembly of the people and annul all decrees passed at the meeting.

Au'gust, the eighth month from January. It was the sixth of the Roman year, and hence was called *Sextilis* till the Emperor Augustus affixed to it his own name.

Augus'ta, the name of many ancient places, as *Augusta Trevirorum*, now *Treves*; *Augusta Taurinorum*, now *Turin*; *Augusta Vindelicorum*, now *Augsburg*; &c.

Augusta (ou-gus'tà), or AGOS'TA, a seaport in the south-east of Sicily, 12 miles north of Syracuse. It exports salt, oil, honey, &c. Pop. 13,286.

Augus'ta, capital of Maine, United States, on the river Kennebec, which is crossed by a bridge and is navigable for small vessels, 43 miles from its mouth, while a dam enables steamboats to ply for 20 miles further up and furnishes immense water-power. Pop. 10,521.

Augusta, the capital of Richmond county, Georgia, United States, on the left bank of the Savannah river, 231 miles from its

mouth; well built, and connected with the river by high-level canals; an important manufacturing centre, having cotton-mills, machine-shops, and railroad works, &c. Pop. 1890, 33,300.

Au'gustine (AURELIUS AUGUSTINUS), St., a renowned father of the Christian Church, was born at Tagaste, in Africa, in 354, his mother Monica being a Christian, his father Patricius a Pagan. His parents sent him to Carthage to complete his education, but he disappointed their expectations by his neglect of serious study and his devotion to pleasure. A lost book of Cicero's, called *Hortensius*, led him to the study of philosophy; but dissatisfied with this he went over to the Manichæans. He was one of their disciples for nine years, but left them, went to Rome, and thence to Milan, where he announced himself as a teacher of rhetoric. St. Ambrose, the bishop of this city, converted him to the faith of his boyhood, and the reading of Paul's epistles wrought an entire change in his life and character. He retired into solitude, and prepared himself for baptism, which he received in his thirty-third year from the hands of Ambrose. Returning to Africa, he sold his estate and gave the proceeds to the poor, retaining only enough to support him. At the desire of the people of Hippo Augustine became the assistant of the bishop of that town, preached with extraordinary success, and in 395 succeeded to the see. He entered into a warm controversy with Pelagius concerning the doctrines of free-will, grace, and predestination, and wrote treatises concerning them, but of his various works his *Confessions* is most secure of immortality. He died August 28, 430, while Hippo was besieged by the Vandals. He was a man of great enthusiasm, self-devotion, zeal for truth, and powerful intellect, and though there have been fathers of the church more learned, none have wielded a more powerful influence. His writings are partly autobiographical (as the *Confessions*), partly polemical, homiletic, or exegetical. The greatest is the *City of God* (*De Civitate Dei*), a vindication of Christianity.

Au'gustine, or AUSTIN, St., the *Apostle of the English*, flourished at the close of the sixth century, was sent with forty monks by Pope Gregory I. to introduce Christianity into Saxon England, and was kindly received by Ethelbert, king of Kent, whom he converted, baptizing 10,000 of his subjects in one day. In acknowledgment of

his tact and success Augustine received the archiepiscopal pall from the pope, with instructions to establish twelve sees in his province, but he could not persuade the British bishops in Wales to unite with the new English Church. He died in 604 or 605.

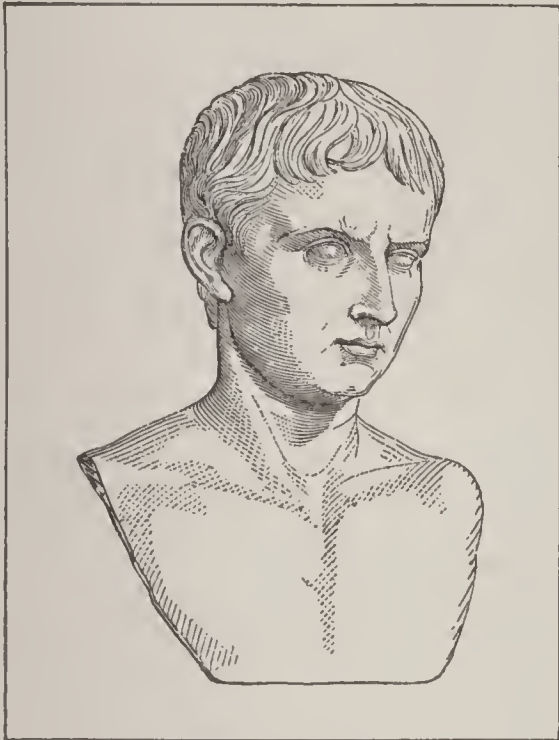
Au'gustins, or AUGUSTINES, members of several monastic fraternities who follow rules framed by the great St. Augustine, or deduced from his writings, of which the chief are the *Canons Regular of St. Augustine*, or *Austin Canons*, and the *Begging Hermits* or *Austin Friars*. The *Austin Canons* were introduced into Britain about 1100, and had about 170 houses in England and about 25 in Scotland. They took the vows of chastity and poverty, and their habit was a long black cassock with a white rochet over it, having over that a black cloak and hood. The *Austin Friars*, originally hermits, were a much more austere body, went barefooted, and formed one of the four orders of mendicants. An order of nuns had also the name of *Augustines*. Their garments, at first black, were latterly violet.

Augusto'vo, a town of Russian Poland, gov. Suwalki. Pop. 11,094.

Augus'tulus, ROMULUS, the last of the Western Roman Emperors; reigned for one year (475-76), when he was overthrown by Odoacer and banished.

Augus'tus, CAIUS JULIUS CÆSAR OCTAVIANUS, originally called *Caius Octavius*, Roman Emperor, was the son of Caius Octavius and Atia, a daughter of Julia, the sister of Julius Cæsar. He was born 63 B.C., and died A.D. 14. Octavius was at Apollonia, in Epirus, when he received news of the death of his uncle (B.C. 44), who had previously adopted him as his son. He returned to Rome to claim Cæsar's property and avenge his death, and now took, according to usage, his uncle's name with the surname Octavianus. He was aiming secretly at the chief power, but at first he joined the republican party, and assisted at the defeat of Antony at Mutina. He got himself chosen consul in 43. Soon after the first triumvirate was formed between him and Antony and Lepidus, and this was followed by the conscription and assassination of three hundred senators and two thousand knights of the party opposed to the triumvirate. Next year Octavianus and Antony defeated the republican army under Brutus and Cassius at Philippi. The victors now divided the Roman world between them, Octavianus

getting the West, Antony the East, and Lepidus Africa. Sextus Pompeius, who had made himself formidable at sea, had now to be put down; and Lepidus, who had hitherto retained an appearance of power, was deprived of all authority (B.C. 36) and retired into private life. Antony and Octavianus now shared the empire between them; but



The Emperor Augustus.

while the former, in the East, gave himself up to a life of luxury, and alienated the Romans by his alliance with Cleopatra and his adoption of Oriental manners, Octavianus skilfully cultivated popularity, and soon declared war ostensibly against the Queen of Egypt. The naval victory of Actium, in which the fleet of Antony and Cleopatra was defeated, made Octavianus master of the world, B.C. 31. He returned to Rome B.C. 29, celebrated a splendid triumph, and caused the temple of Janus to be closed in token of peace being restored. Gradually all the highest offices of state, civil and religious, were united in his hands, and the new title of Augustus was also assumed by him, being formally conferred by the senate in B.C. 27. Great as was the power given to him, he exercised it with wise moderation, and kept up the show of a republican form of government. Under him successful wars were carried on in Africa and Asia (against the Parthians), in Gaul and Spain, in Pannonia, Dalmatia, &c.; but the defeat of Varus by the Germans under Arminius with the

loss of three legions, -A.D. 9, was a great blow to him in his old age. Many useful decrees proceeded from him, and various abuses were abolished. He gave a new form to the senate, employed himself in improving the morals of the people, enacted laws for the suppression of luxury, introduced discipline into the armies, and order into the games of the circus. He adorned Rome in such a manner that it was said, 'He found it of brick, and left it of marble.' The people erected altars to him, and, by a decree of the senate, the month Sextilis was called *Augustus* (our August). He was a patron of literature; Virgil and Horace were befriended by him, and their works and those of their contemporaries are the glory of the *Augustan Age*. His death, which took place at Nola, plunged the empire into the greatest grief. He was thrice married, but had no son, and was succeeded by his stepson Tiberius, whose mother Livia he had married after prevailing on her husband to divorce her.

Augustus II. (or **FREDERICK-AUGUSTUS I.**), Elector of Saxony and King of Poland, second son of John George III., elector of Saxony, was born at Dresden in 1670, died at Warsaw 1733. He succeeded his brother in the electorate in 1694, and the Polish throne having become vacant, in 1696, by the death of John Sobieski, Augustus presented himself as a candidate for it and was successful. He joined with Peter the Great in the war against Charles XII. of Sweden, invaded Livonia, but was defeated by Charles near Riga, and at Clissow, between Warsaw and Cracow. In 1704 he was deposed, and two years later formally resigned the crown to Stanislaus I., now devoting himself to his Saxon dominions. In 1709, after the defeat of Charles at Pultowa, the Poles recalled Augustus, who united himself anew with Peter. The two monarchs, in alliance with Denmark, sent troops into Pomerania, but the Swedish general Steinbock defeated the allies at Gadebusch, Dec. 20, 1712. The death of Charles XII. put an end to the war, and Augustus concluded a peace with Sweden. A confederation was now formed in Poland against the Saxon troops, but through the mediation of Peter an arrangement was concluded by which the Saxon troops were removed from the kingdom. Augustus now gave himself wholly up to voluptuousness and a life of pleasure. His court was one of the most splendid and polished in Europe.

The Poles yielded but too readily to the example of their king, and the last years of his reign were characterized by boundless luxury and corruption of manners. His wife left him one son. The Countess of Königsmark bore him the celebrated commander Marshal Saxe (Maurice of Saxony).

Augustus III. (or FREDERICK-AUGUSTUS II.), Elector of Saxony and King of Poland, son of Augustus II., born at Dresden 1696, succeeded his father as elector in 1733, and was chosen King of Poland through the influence of Austria and Russia. He closely followed the example of his father, distinguishing himself by the splendour of his feasts and the extravagance of his court. He preferred Dresden to Warsaw, and through his long absence from Poland the government sank into entire inactivity. During the first Silesian war he formed a secret alliance with Austria. The consequence was that during the second Silesian war Frederick the Great of Prussia pushed on into Saxony, and occupied the capital, from which Augustus fled. By the peace of Dresden, Dec. 25, 1745, he was reinstated in the possession of Saxony. In 1756 he was involved anew in a war against Prussia. When Frederick declined his proposal of neutrality he left Dresden, and entered the camp at Pirna, where 17,000 Saxon troops were assembled. Frederick surrounded the Saxons, who were obliged to surrender, and Augustus fled to Poland. On the threat of invasion by Russia he returned to Dresden, where he died in 1763. His son, Frederick Christian, succeeded him as Elector of Saxony, and Stanislaus Poniatowski as King of Poland.

Auk, a name of certain swimming birds, family Alcidae, including the great auk, the little auk, the puffin, &c. The genus *Alca*, or auks proper, contains only two species, the great auk (*Alca impennis*), and the razor-bill (*Alca torda*). The great auk or gair-fowl, a bird about 3 feet in length, used to be plentiful in northerly regions, and also visited the British shores, but has become extinct. Some seventy skins, about as many eggs, with bones representing perhaps a hundred individuals, are preserved in various museums. Though the largest species of the family, the wings were only 6 inches from the carpal joint to the tip, totally useless for flight, but employed as fins in swimming, especially under water. The tail was about 3 inches long; the beak was high, short, and compressed: the head, neck, and

upper parts were blackish; a large spot under each eye, and most of the under parts white. Its legs were placed so far back as to cause it to sit nearly upright. The razor-



Razor-bill (*Alca torda*).

bill is about 15 inches in length, and its wings are sufficiently developed to be used for flight. Thousands of these birds are killed on the coast of Labrador, for their breast feathers, which are warm and elastic.

Aulap'olay, or ALLEPPI, a seaport on the south-west coast of Hindustan, Travancore, between the sea and a lagoon, with a safe roadstead all the year round; exports timber, coir, cocoa-nuts, &c. Pop. 30,000.

Aulic (Lat. *aula*, a court or hall), an epithet given to a council (the *Reichshof-rath*) in the old German Empire, one of the two supreme courts of the German Empire, the other being the court of the imperial chamber (*Reichskammergericht*). It had not only concurrent jurisdiction with the latter court, but in many cases exclusive jurisdiction, in all feudal processes, and in criminal affairs, over the immediate feudatories of the emperor and in affairs which concerned the imperial government. The title is now applied in Germany in a general sense to the chief council of any department, political, administrative, judicial, or military.

Au'lis, in ancient Greece, a seaport in Bœotia, on the strait called Euripus, between Bœotia and Eubœa. See *Iphigenia*.

Aullagas (ou-lyä'gäs), a salt lake of Bolivia, which receives the surplus waters of Lake Titicaca through the Rio Desaguadero, and has only one perceptible insignificant outlet, so that what becomes of its superfluous water is still a matter of uncertainty.

Aumale (ō-mäl), a small French town, department of Seine Inférieure, 35 miles N.E. of Rouen, which has given titles to

several notables in French history.—JEAN D'ARCOURT, EIGHTH COUNT D'AUMALE, fought at Agincourt, and defeated the English at Gravelle (1423).—CLAUDE II., DUC D'AUMALE, one of the chief instigators of the Massacre of St. Bartholomew, was killed 1573.—CHARLES DE LORRAINE, DUC D'AUMALE, was an ardent partisan of the League in the politico-religious French wars of the sixteenth century.—HENRI-EUGENE-PHILIPPE LOUIS D'ORLEANS, DUC D'AUMALE, son of Louis Philippe, king of the French, was born in 1822. In 1847 he succeeded Marshal Bugeaud as governor-general of Algeria, where he had distinguished himself in the war against Abd-el-Kader. After the revolution of 1848 he retired to England; but he returned to France in 1871, and was elected a member of the assembly; became inspector-general of the army in 1879, and was expelled along with the other royal princes in 1886. He is author of a History of the House of Condé, several pamphlets, &c.

Aun'gerville, RICHARD, known as Richard de Bury (from his birthplace Bury St. Edmund's), English statesman, bibliographer, and correspondent of Petrarch, born 1281, died 1345. He entered the order of Benedictine monks, and became tutor to the Prince of Wales, afterwards Edward III. Promoted to several offices of dignity, he ultimately became Bishop of Durham, and Lord-chancellor of England. During his frequent embassies to the Continent he made the acquaintance of many of the eminent men of the day. He was a diligent collector of books, and formed a library at Oxford. Author of Philobiblon, 1473; Epistolæ Familiarium, including letters to Petrarch, &c.

Aunoy (ō-nwä), COUNTESS D', French writer, born 1650, died 1705, was the author of Contes des Fées (Fairy Tales), many of which, such as The White Cat, The Yellow Dwarf, &c., have been translated into English. She also wrote a number of novels, historical memoirs, &c.

Aurangabad', a town of India, in the territory of the Nizam of Haidarabad, 175 miles from Bombay. It contains a ruined palace of Aurengzebe and a mausoleum erected to the memory of his favourite wife. It was formerly a considerable trading centre, but its commercial importance decreased when Haidarabad became the capital of the Nizam. Pop. 20,500.

Aurantia'ceæ, the orange tribe, a nat.

order of plants, polypetalous dicotyledons, with leaves containing a fragrant essential oil in transparent dots, and a superior pulpy fruit, originally natives of India; examples comprise the orange, lemon, lime, citron, and shaddock.

Auray (ō-rā), a seaport of north-west France, dep. Morbihan, with a deaf and dumb institute, and within 2 miles St. Anne of Auray, a famous place of pilgrimage. Pop. 4500.

Aure'lian, LUCIUS DOMITIUS AURELIANUS, Emperor of Rome, of humble origin, was born about 212 A.D., rose to the highest rank in the army, and on the death of Claudius II. (270) was chosen emperor. He delivered Italy from the barbarians (Alemanni and Marcomanni), and conquered the famous Zenobia, queen of Palmyra. He followed up his victories by the reformation of abuses, and the restoration throughout the empire of order and regularity. He lost his life, A.D. 275, by assassination, when heading an expedition against the Persians.

Aure'lius Antonin'us, MARCUS, often called simply MARCUS AURELIUS, Roman emperor and philosopher, son-in-law, adopted son, and successor of Antoninus Pius, born A.D. 121, succeeded to the throne 161, died 180. His name originally was Marcus Annianus Verus. He voluntarily shared the government with Lucius Verus, whom Antoninus Pius had also adopted. Brought up and instructed by Plutarch's nephew, Sextus, the orator Herodes Atticus, and L. Volusius Mecianus, the jurist, he had become acquainted with learned men, and formed a particular love for the Stoic philosophy. A war with Parthia broke out in the year of his accession, and did not terminate till 166. A confederacy of the northern tribes now threatened Italy, while a frightful pestilence, brought from the East with the army, raged in Rome itself. Both emperors set out in person against the rebellious tribes. In 169 Verus died, and the sole command of the war devolved on Marcus Aurelius, who prosecuted it with the utmost rigour, and nearly exterminated the Marcomanni. His victory over the Quadi (174) is connected with a famous legend. Dion Cassius tells us that the twelfth legion of the Roman army was shut up in a defile, and reduced to great straits for want of water, when a body of Christians enrolled in the legion prayed for relief. Not only was rain sent, which enabled the Romans to quench their thirst, but a fierce

storm of hail beat upon the enemy, accompanied by thunder and lightning, which so terrified them that a complete victory was obtained, and the legion was ever after called 'The Thundering Legion.' After this victory the Marcomanni, the Quadi, as well as the rest of the barbarians, sued for peace. The sedition of the Syrian governor Avidius Cassius, with whom Faustina, the empress, was in treasonable communication, called off the emperor from his conquests, but before he reached Asia the rebel was assassinated. Aurelius returned to Rome, after visiting Egypt and Greece, but soon new incursions of the Marcomanni compelled him once more to take the field. He defeated the enemy several times, but was taken sick at Sirmium, and died at Vindobona (Vienna) in 180. His only extant work is the *Meditations*, written in Greek, and which has been translated into most modern languages. This may be regarded as a manual of practical morality, in which wisdom, gentleness, and benevolence are combined in the most fascinating manner. Many believe it to have been intended for the instruction of his son Commodus. Aurelius was one of the best emperors ever Rome saw, although his philosophy and the magnanimity of his character did not restrain him from the persecution of the Christians, whose religious doctrines he was led to believe were subversive of good government.

Au'rengzebe (-zēb; 'ornament of the throne'), one of the greatest of the Mogul emperors of Hindustan, born in Oct. 1618 or 1619. When he was nine years old his weak and unfortunate father, Shah Jehan, succeeded to the throne. Aurengzebe was distinguished, when a youth, for his serious look, his frequent prayers, his love of solitude, his profound hypocrisy, and his deep plans. In his twentieth year he raised a body of troops by his address and good fortune, and obtained the government of the Deccan. He stirred up dissensions between his brothers, made use of the assistance of one against the other, and finally shut his father up in his harem, where he kept him prisoner. He then murdered his relatives one after the other, and in 1659 ascended the throne. Notwithstanding the means by which he had got possession of power, he governed with much wisdom. Two of his sons, who endeavoured to form a party in their own favour, he caused to be arrested and put to death by slow poison. He carried on

many wars, conquered Golconda and Bijapur, and drove out, by degrees, the Mah-rattas from their country. After his death the Mogul Empire declined.

Aure'ola, **Au'reole**, in paintings, an illumination surrounding a holy person, as Christ, a saint, or a martyr, intended to represent a luminous cloud or haze emanating from him. It is generally of an oval shape, or may be nearly or quite circular, and is of similar character with the nimbus surrounding the heads of sacred personages.

Au'rēus, the first gold coin which was coined at Rome, 207 B. C. Its value varied at different times, from about \$3 to \$6.

Aurich (ou'rēh), a German town, prov. of Hanover. Pop. 5390.

Au'ricle. See *Heart*.

Auric'ula, a garden flower derived from the yellow *Primula Auricula*, found native in the Swiss Alps, and sometimes called bear's-ear from the shape of its leaves. It has for centuries been an object of cultivation by florists, who have succeeded in raising from seed a great number of beautiful varieties. Its leaves are obovate, entire or serrated, and fleshy, varying, however, in form in the numerous varieties. The flowers are borne on an erect umbel and central scape with involucre. The original colours of the corolla are yellow, purple, and variegated, and there is a mealy covering on the surface.

Auricular Confession. See *Confession*.

Au'rifaber, the Latinized name of Johann Goldschmidt, one of Luther's companions, born 1519, became pastor at Erfurt in 1566, died there in 1579. He collected the unpublished MSS. of Luther, and edited the *Epistolæ* and the *Table-talk*.

Auriflamme. See *Ori'flamme*.

Auri'ga, in astronomy, the *Waggoner*, a constellation of the northern hemisphere, containing sixty-eight stars, including *Capella* of the first magnitude.

Aurillac (ō-rē-yāk), a town of France, capital of the dep. Cantal, in a valley watered by the Jordanne, about 270 miles s. of Paris; well-built, with wide streets; copper works, paper works, manufactures of lace, tapestry, leather, &c. Pop. 13,727.

Aurochs (a'roks), a species of wild bull or buffalo, the *urus* of Cæsar, *bison* of Pliny, the European bison, *Bos* or *Bonassus Bison* of modern naturalists. This animal was once abundant in Europe, but were it not for the protection afforded by the Emperor of Russia to a few herds which inhabit the

AURORA — AURORA BOREALIS.

forests of Lithuania it would soon be extinct.

Auro'ra (Gr. *Eōs*), in classical mythology, the goddess of the dawn, daughter of Hyperion and Theia, and sister of Helios and Selēnē (Sun and Moon). She was represented as a charming figure, 'rosy-fingered,' clad in a yellow robe, rising at dawn from the ocean and driving her chariot through the heavens. Among the mortals whose beauty captivated the goddess poets mention Orion, Tithōnus, and Cephālus.

Auro'ra, an American city, of Kane county, Illinois, on Fox river, 40 miles w. by s. of Chicago; it has flourishing manufactures, railway works, and a considerable trade. Pop. 1890, 19,688.

Auro'ra, one of the New Hebrides islands, S. Pacific Ocean, about 30 miles long by 5 wide. It rises to a considerable elevation, and is covered with a luxuriant vegetation.

Auro'ra Borea'lis, a luminous meteoric phenomenon appearing in the north, most frequently in high latitudes, the correspond-



Aurora Borealis, as seen from the "Pandora" when crossing the Polar Circle.

ing phenomenon in the southern hemisphere being called *Aurora Australis*, and both being also called *Polar Light*, *Streamers*, &c. The northern aurora has been far the most observed and studied. It usually manifests itself by streams of light ascending towards the zenith from a dusky line of cloud or haze a few degrees above the horizon, and stretching from the north towards the west and east, so as to form an arc with its ends on the horizon, and its different parts and rays are constantly in motion. Sometimes it appears in detached places; at other times it almost covers the whole sky. It assumes many shapes and a variety of colours, from a pale red or yellow to a deep red or blood colour; and in the northern latitudes serves to illuminate the earth and cheer the gloom of the long winter nights. The appearance of the aurora borealis so exactly resembles

the effects of artificial electricity that there is every reason to believe that their causes are identical. When electricity passes through rarefied air it exhibits a diffused luminous stream which has all the characteristic appearances of the aurora, and hence it is highly probable that this natural phenomenon is occasioned by the passage of electricity through the upper regions of the atmosphere. The influence of the aurora upon the magnetic needle is now considered as an ascertained fact, and the connection between it and magnetism is further evident from the fact that the beams or coruscations issuing from a point in the horizon west of north are frequently observed to run in the magnetic meridian. What are known as magnetic storms are invariably connected with exhibitions of the aurora, and with spontaneous galvanic currents in the ordinary

telegraph wires; and this connection is found to be so certain that, upon remarking the display of one of the three classes of phenomena, we can at once assert that the other two are also observable. The aurora borealis is said to be frequently accompanied by sound, which is variously described as resembling the rustling of pieces of silk against each other, or the sound of wind against the flame of a candle. The aurora of the southern hemisphere is quite a similar phenomenon to that of the north.

Aurungabad. See *Aurangabad*.

Aurungzebe. See *Aurengzebe*.

Auscul'tion, a method of distinguishing the state of the internal parts of the body, particularly of the thorax and abdomen, by observing the sounds arising in the part either through the immediate application of the ear to its surface (immediate auscultation), or by applying the stethoscope to the part, and listening through it (mediate auscultation). Auscultation may be used with more or less advantage in all cases where morbid sounds are produced, but its general applications are: the *auscultation* of respiration, the *auscultation* of the voice; *auscultation* of coughs; *auscultation* of sounds foreign to all these, but sometimes accompanying them; *auscultation* of the actions of the heart; obstetric *auscultation*. The parts when struck also give different sounds in health and disease.

Auso'nia, an ancient poetical name of Italy.

Auso'nus, DECIUS MAGNUS, Roman poet, born at Burdigala (Bordeaux) about 310 A.D., died about 392. Valentinian intrusted to him the education of his son Gratian, and appointed him afterwards quæstor and pretorian prefect. Gratian appointed him consul in Gaul, and after this emperor's death he lived upon an estate at Bordeaux, devoted to literary pursuits. He wrote epigrams, idyls, eclogues, letters in verse, &c., still extant, and was probably a Christian. His poems have no great merit.

Aus'pices, among the ancient Romans strictly omens or auguries derived from birds, though the term was also used in a wider sense. Nothing of importance was done without taking the auspices, which, however, simply showed whether the enterprise was likely to result successfully or not, without supplying any further information. Magistrates possessed the right of taking the auspices, in which they were usually assisted by an augur. Before a war or cam-

paign a Roman general always took the auspices, and hence the operations were said to be carried out 'under his auspices.' See *Augur*.

Aus'sig, a town in Bohemia, near the junction of the Bila with the Elbe, 42 miles N.N.W. of Prague; has large manufactures of woollens, chemicals, &c. Pop. 16,524.

Aus'ten, JANE, English novelist, born 1775, at Steventon, in Hants, of which parish her father was rector. Her principal novels are, *Sense and Sensibility*; *Pride and Prejudice*; *Mansfield Park*; and *Emma*. Two more were published after her death, entitled *Northanger Abbey*, and *Persuasion*, which were, however, her most early attempts. Her novels are marked by ease, nature, and a complete knowledge of the domestic life of the English middle classes of her time. She died in 1817.

Aus'terlitz, a town with 3452 inhabitants, in Moravia, 10 miles E. of Brünn, famous for the battle of the 2d of December, 1805, fought between the French (70,000 in number) and the allied Austrian and Russian armies (95,000). The decisive victory of the French led to the Peace of Pressburg between France and Austria.

Aus'tin, capital of the state of Texas, on the Colorado, about 200 miles from its mouth, and accessible to steamboats during certain seasons. There is a state university and other institutions, and a splendid capitol built of red granite. Pop. 14,575.

Aus'tin, JOHN, an English writer on jurisprudence, born 1790, died 1859. From 1826 to 1835 he filled the chair of jurisprudence at London University. He served on several royal commissions, one of which took him to Malta; lived for some years on the Continent, and finally settled at Weybridge in Surrey. His fame rests solely on his great works: *The Province of Jurisprudence Determined*, published in 1832; and his *Lectures on Jurisprudence*, published by his widow between 1861 and 1863. —His wife, Sarah, one of the Taylors of Norwich, produced translations of German works, and other books bearing on Germany or its literature; also, *Considerations on National Education*, &c. Born 1793, died 1867. Her daughter, Lady Duff Gordon, translated the *Amber Witch*, and other German works.

Austin, St. See *Augustine*.

Austin Friars. See *Augustins*.

Australasia, a division of the globe usually regarded as comprehending the islands

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of Australia, Tasmania, New Zealand, New Caledonia, the New Hebrides, the Solomon Islands, New Ireland, New Britain, the Admiralty Islands, New Guinea, and the Arru Islands, besides numerous other islands and island groups; area, 3,259,199 square miles, pop., 1891, 4,285,297. It forms one of three portions into which some geographers have divided Oceania, the other two being Malasia and Polynesia.

Australia (older name, **NEW HOLLAND**), the largest island in the world, a sea-girt continent, lying between the Indian and Pacific Oceans, s.e. of Asia; between lat. $10^{\circ} 39'$ and $39^{\circ} 11'$ s.; lon. $113^{\circ} 5'$ and $153^{\circ} 16'$ e.; greatest length, from w. to e., 2400 miles; greatest breadth, from n. to s., 1700 to 1900 miles. It is separated from New Guinea on the north by Torres Strait, from Tasmania on the south by Bass Strait. It is divided into two unequal parts by the Tropic of Capricorn, and consequently belongs partly to the South Temperate, partly to the Torrid Zone. It is occupied by five British colonies, namely, New South Wales, Victoria, and Queensland in the east; South Australia in the middle, stretching from sea to sea; and Western Australia in the west. Their area and population are as follows (but authorities differ as to the areas):—

	Area in sq. m.	Pop. 1891.
New South Wales.....	310,700	1,134,207
Victoria.....	87,884	1,140,411
Queensland.....	668,497	393,718
South Australia.....	903,690	315,048
Western Australia....	1,060,000	49,782
	3,030,771	3,033,166

Sydney, the capital of N. S. Wales, Melbourne, the capital of Victoria, Adelaide, the capital of S. Australia, and Brisbane, the capital of Queensland, are the chief towns.

Although there are numerous spacious harbours on the coasts, there are few remarkable indentations; the principal being the Gulf of Carpentaria, on the n., the Great Australian Bight, and Spencer's Gulf, on the s. The chief projections are Cape York Peninsula and Arnhem Land in the north. Parallel to the n.e. coast runs the Great Barrier Reef for 1000 miles. In great part the e. coast is bold and rocky, and is fringed with many small islands. Part of the s. coast is low and sandy, and part presents cliffs of several hundred feet high. The n. and w. coasts are generally low, with some elevations at intervals.

The interior, so far as explored, is largely composed of rocky tracts and barren plains with little or no water. The whole continent forms an immense plateau, highest in the east, low in the centre, and with a narrow tract of land usually intervening between the elevated area and the sea. The base of the table-land is granite, which forms the surface-rock in a great part of the south-west, and is common in the higher grounds along the east side. Secondary (cretaceous) and tertiary rocks are largely developed in the interior. Silurian rocks occupy a large area in South Australia, on both sides of Spencer Gulf. The mountainous region in the south-east and east is mainly composed of volcanic, Silurian, carbonaceous, and carboniferous rocks yielding good coal. No active volcano is known to exist, but in the south-east there are some craters only recently extinct. The highest and most extensive mountain-system is a belt about 150 miles wide skirting the whole eastern and south-eastern border of the continent, and often called in whole or in part the Great Dividing Range, from forming the great water-shed of Australia. A part of it, called the Australian Alps, in the south-east, contains the highest summits in Australia, Mount Kosciusko (7175 feet), Mount Clarke (7256), and Mount Townsend (7353). West of the Dividing Range are extensive plains or downs admirably adapted for pastoral purposes. The deserts and scrubs, which occupy large areas of the interior, are a characteristic feature of Australia. The former are destitute of vegetation, or are clothed only with a coarse spiny grass that affords no sustenance to cattle or horses; the latter are composed of a dense growth of shrubs and low trees, often impenetrable till the traveller has cleared a track with his axe.

The rivers of Australia are nearly all subject to great irregularities in volume, many of them at one time showing a channel in which there is merely a series of pools, while at another they inundate the whole adjacent country. The chief is the Murray, which, with its affluents the Murrumbidgee, Lachlan, and Darling, drains a great part of the interior west of the Dividing Range, and falls into the sea on the south coast (after entering Lake Alexandrina). Its greatest tributary is the Darling, which may even be regarded as the main stream. On the east coast are the Hunter, Clarence, Brisbane, Fitzroy, and Burdekin; on the

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West, the Swan, Murchison, Gascoyne, Ashburton, and De Grey; on the north, the Fitzroy, Victoria, Flinders, and Mitchell. The Australian rivers are of little service in facilitating internal communication. Many of them lose themselves in swamps or sandy wastes of the interior. A considerable river of the interior is Cooper's Creek, or the Barcoo, which falls into Lake Eyre, one of a group of lakes on the south side of the continent having no outlet, and accordingly salt. The principal of these are Lakes Eyre, Torrens, and Gairdner, all of which vary in size and saltiness according to the season. Another large salt lake of little depth, Lake Amadeus, lies a little west of the centre of Australia. Various others of less magnitude are scattered over the interior.

The climate of Australia is generally hot and dry, but very healthy. In the tropical portions there are heavy rains, and in most of the coast districts there is a sufficiency of moisture, but in the interior the heat and drought are extreme. Considerable portions now devoted to pasturage are liable at times to suffer from drought. At Melbourne the mean temperature is about 56°, at Sydney about 63°. The south-eastern settled districts are at times subject to excessively hot winds from the interior, which cause great discomfort, and are often followed by a violent cold wind from the south ('southerly bursters'). In the mountainous and more temperate parts snow-storms are common in winter (June, July, and August).

Australia is a region containing a vast quantity of mineral wealth. Foremost come its rich and extensive deposits of gold, which, since the precious metal was first discovered in 1851, have produced a total of more than £270,000,000. The greatest quantity has been obtained in Victoria, but New South Wales and Queensland have also yielded a considerable amount. Probably there are rich stores of gold as yet undiscovered. Australia also possesses silver, copper, tin, lead, zinc, antimony, mercury, plumbago, &c., in abundance, besides coal (now worked to a considerable extent in New South Wales) and iron. Various precious stones are found, as the garnet, ruby, topaz, sapphire, and even the diamond. Of building stone there are granite, limestone, marble, and sandstone.

The Australian flora presents peculiarities which mark it off by itself in a very decided manner. Many of its most striking features

have an unmistakable relation to the general dryness of the climate. The trees and bushes have for the most part a scanty foliage, presenting little surface for evaporation, or thick leathery leaves well fitted to retain moisture. The most widely spread types of Australian vegetation are the various kinds of gum-tree (*Eucalyptus*), the shea-oak (*Casuarina*), the acacia or wattle, the grass-tree (*Xanthorrhœa*), many varieties of Proteaceæ, and a great number of ferns and tree-ferns. Of the gum-tree there are found upwards of 150 species, many of which are of great value. Individual specimens of the 'peppermint' (*E. amygdalina*) have been found to measure from 480 to 500 feet in height. As timber-trees the most valuable members of this genus are the *E. rostrata* (or red-gum), *E. leucoxylon*, and *E. marginata*, the timber of which is hard, dense, and almost indestructible. A number of the gum-trees have deciduous bark. The wattle or acacia includes about 300 species, some of them of considerable economic value, yielding good timber or bark for tanning. The most beautiful and most useful is that known as the golden wattle (*A. dealbata*), which in spring is adorned with rich masses of fragrant yellow blossom. Palms—of which there are 24 species, all except the coco-palm peculiar to Australia—are confined to the north and east coasts. In the 'scrubs' already mentioned hosts of densely intertwined bushes occupy extensive areas. The *mallee* scrub is formed by a species of dwarf eucalyptus, the *mulga* scrub by a species of thorny acacia. A plant which covers large areas in the arid regions is the *spinifex* or porcupine grass, a hard coarse and excessively spiny plant, which renders travelling difficult, wounds the feet of horses, and is utterly uneatable by any animal. Other large tracts are occupied by herbs or bushes of a more valuable kind, from their affording fodder. Foremost among those stands the salt-bush (*Atriplex nummularia*, order Chenopodiaceæ). Beautiful flowering plants are numerous. Australia also possesses great numbers of turf-forming grasses, such as the kangaroo-grass (*Anthistiria australis*), which survives even a tolerably protracted drought. The native fruit-trees are few and unimportant, and the same may be said of the plants yielding roots used as food; but exotic fruits and vegetables may now be had in the different colonies in great abundance and of excellent quality. The vine, the olive,

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and mulberry thrive well, and quantities of wine are now produced. The cereals of Europe and maize are extensively cultivated, and large tracts of country, particularly in Queensland, are under the sugar-cane.

The Australian fauna is almost unique in its character. Its great feature is the nearly total absence of all the forms of mammalia which abound in the rest of the world, their place being supplied by a great variety of marsupials—these animals being nowhere else found, except in the opossums of America. There are about 110 kinds of marsupials (of which the kangaroo, wombat, bandicoot, and phalangers or opossums, are the best-known varieties), over twenty kinds of bats, a wild dog (the dingo), and a number of rats and mice. Two extraordinary animals, the platypus, or water-mole of the colonist (*Ornithorhynchus*), and the porcupine ant-eater (*Echidna*) constitute the lowest order of mammals (*Monotremata*), and are confined to Australia. Their young are produced from eggs. Australia now possesses a large stock of the domestic animals of Britain, which thrive there remarkably well. The breed of horses is excellent. Horned cattle and sheep are largely bred, the first attaining a great size, while the sheep improve in fleece and their flesh in flavour. There are upwards of 650 different species of birds, the largest being the emu, or Australian ostrich, and a species of cassowary. Peculiar to the country are the black-swan, the honey-sucker, the lyre-bird, the brush-turkey, and other mound-building birds, the bower-birds, &c. The parrot tribe preponderate over most other groups of birds in the continent. There are many reptiles, the largest being the alligator, found in some of the northern rivers. There are upwards of 60 different species of snakes, some of which are very venomous. Lizards, frogs, and insects are also numerous in various parts. The seas, rivers, and lagoons abound in fish of numerous varieties, and other aquatic animals, many of them peculiar. Whales and seals frequent the coasts. On the N. coasts are extensive fisheries of trepang, much visited by native traders from the Indian Archipelago. Some animals of European origin, such as the rabbit and the sparrow, have developed into real pests in several of the colonies.

The natives belong to the Australian negro stock, and are sometimes considered the lowest as regards intelligence in the whole human family, though this is

doubtful. At the census of 1881 they were believed to number about 31,700, exclusive of those in the unexplored parts. They are of a dark-brown or black colour, with jet-black curly but not woolly hair, of medium size, but inferior muscular development. In the settled parts of the continent they are inoffensive, and rapidly dying out. They have no fixed habitations; in the summer they live almost entirely in the open air, and in the more inclement weather they



Australian Aborigines.

shelter themselves with bark erections of the rudest construction. They have no cultivation and no domestic animals. Their food consists of such animals as they can kill, and no kind of living creature seems to be rejected, snakes, lizards, frogs, and even insects being eaten, often half raw. They are ignorant of the potter's art. In their natural condition they wear little or no clothing. They speak a number of different languages or dialects. The women are regarded merely as slaves, and are frightfully maltreated. They have no religion; they practise polygamy, and are said to sometimes resort to cannibalism, but only in exceptional circumstances. They are occasionally employed by the settlers in light

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kinds of work, and as horse-breakers; but they dislike continuous occupation, and soon give it up. The weapons of all the tribes are generally similar, consisting of spears, shields, boomerangs, wooden axes, clubs, and stone hatchets. Of these the boomerang is the most singular, being an invention confined to the Australians.

Each of the colonies is quite independent of the others, having a governor, administration, and (except Western Australia) a parliament of its own. The governors are appointed by the queen, and all acts passed by the colonial legislatures must receive the royal assent. Each parliament consists of two houses corresponding to the British House of Lords and House of Commons, the lower house being elected by manhood suffrage. Each governor is assisted by a ministry, and the machinery of government resembles that of the home country. The aggregate annual revenue of the colonies is about £20,000,000, the annual expenditure several millions more. The public debt is over £100,000,000. The colonies have a considerable defensive force of militia and volunteers, also a number of gun-boats, torpedo-boats, &c., besides which there is always a squadron of British men-of-war on the Australian station. It is probable that in time the colonies may be united into one dominion as has been the case in Canada. In 1885 a measure was passed by the imperial parliament to enable the whole of the Australasian colonies to federate. So far the colonies of Victoria, Queensland, Tasmania, Western Australia, and Fiji have taken advantage of the act, and the first meeting of the Federal Council took place in January, 1886. There is no established church in any of the colonies. The denomination which numbers most adherents is the English or Anglican Church, next to which come the R. Catholics, Presbyterians, and Methodists. Education is well provided for, instruction in the primary schools being in some cases free and compulsory, and the higher education being more and more attended to. There are flourishing universities in Melbourne, Sydney, and Adelaide. Newspapers are exceedingly numerous, and periodicals of all kinds are abundant. There is as yet no native literature of any distinctive type, but names of Australian writers of ability both in prose and poetry are beginning to be known beyond their own country.

Pastoral and agricultural pursuits and

mining are the chief occupations of the people, though manufactures and handicrafts also employ large numbers. For sheep-rearing and the growth of wool the Australian colonies are unrivalled, and while the production of gold has considerably decreased that of wool is constantly on the increase. The great bulk of the wool exported goes to Britain, which in the last two or three years has received over 300,000,000 lbs. from the Australian colonies annually. The commerce is rapidly extending, and becoming every year more important to Britain, whence the colonists derive their chief supplies of manufactured goods in return for wool, gold, and other produce. Next to wool come gold, tin, copper, wheat, preserved meat, and tallow, hides and skins, cotton, tobacco, sugar, and wine as the most important items of export. The chief imports consist of textile fabrics, haberdashery, and clothing, machinery and metal goods. The aggregate imports in 1891 amounted to £63,410,644 in value, the exports, £61,567,665. There are upwards of 7000 miles of railway in actual use or in course of construction, and about 34,000 miles of telegraph. The longest telegraph line is that running northwards across the continent from Adelaide. The two chief routes for mails between Britain and the Australian colonies are by way of the Suez Canal, and by San Francisco across the American continent. The coinage is the same as in the mother country. Banks and banking offices are numerous, including post-office or other savings-banks for the reception of small sums.

It is doubtful when Australia was first discovered by Europeans. Between 1531 and 1542 the Portuguese published the existence of a land which they called Great Java, and which corresponded to Australia, and probably the first discovery of the country was made by them early in the sixteenth century. The first authenticated discovery is said to have been made in 1601, by a Portuguese named Manoel Godinho de Eredia. In 1606 Torres, a Spaniard, passed through the strait that now bears his name, between New Guinea and Australia. Between this period and 1628 a large portion of the coast-line of Australia had been surveyed by various Dutch navigators. In 1664 the continent was named New Holland by the Dutch government. In 1688 Dampier coasted along part of Australia, and about 1700 explored a part of the w. and

N.W. coasts. In 1770 Cook carefully surveyed the E. coast, named a number of localities, and took possession of the country for Britain. He was followed by Bligh in 1789, who carried on a series of observations on the N.E. coast, adding largely to the knowledge already obtained of this new world. Colonists had now arrived on the soil, and a penal settlement was formed (1788) at Port Jackson. In this way was laid the foundation of the future colony of New South Wales. The Moreton Bay district (Queensland) was settled in 1825; in 1835 the Port Phillip district. In 1851 the latter district was erected into a separate colony under the name of Victoria. Previous to this time the colonies both of Western Australia and of South Australia had been founded—the former in 1829, the latter in 1836. The latest of the colonies is Queensland, which only took an independent existence in 1859. The discovery of gold in abundance took place in 1851 and caused an immense excitement and great influx of immigrants. The population was then only about 350,000, and was slowly increasing; but the discovery of the precious metal started the country on that career of prosperity which has since been almost uninterrupted. Convicts were long sent to Australia from the mother country, but transportation to New South Wales practically ceased in 1840, and the last convict vessel to W. Australia arrived in 1868. Altogether about 70,000 convicts were landed in Australia (besides almost as many in Tasmania).

The record of interior exploration forms an interesting part of Australian history. This has been going on since early in the century, and is as yet far from complete. There is still a large area of the continent of which little or nothing is known, comprising especially a vast territory belonging to Western Australia, and a portion of South Australia. Among the men who have won fame in the field of Australian exploration are Oxley (1817–23), who partly explored the Lachlan and Macquarie, discovered the Brisbane, &c.; Hume and Hovell (1824), who crossed what is now the colony of Victoria from north to south; Cunningham (1827), who discovered the Darling Downs; Sturt (1828–29), who examined the Macquarie, part of the Darling, and the Murrumbidgee, which he traced to the Murray, sailing down the latter to Lake Alexandrina; in 1844 he penetrated to near the middle of

the continent from the south; Mitchell (1831–36), made extensive explorations in N. S. Wales and Victoria; M'Millan (1839), explored and traversed Gippsland; Eyre (1840), travelled by the coast from Adelaide to King George's Sound; Leichhardt in 1844–45 travelled from Brisbane to Port Essington, discovering fine tracts of territory and the numerous rivers flowing into the Gulf of Carpentaria; in 1848 he was lost in the northern interior, in attempting to cross Australia from east to west, and nothing further regarding his fate has been discovered; Kennedy (1848) was killed in exploring Cape York Peninsula; A. C. Gregory (1855–56) explored part of North-western Australia, and crossed from that to the Brisbane district, an important exploring journey; M'Douall Stuart (1859–60–62) crossed the continent from south to north and back again nearly in the line of the present overland telegraph; Burke, Wills, Gray, and King (1860–61), crossed from Melbourne to the Gulf of Carpentaria, but Burke, Wills, and Gray perished on the return journey; F. T. Gregory (1861) explored the region of the Ashburton, Fortesque and other rivers of north-west Australia; Warburton (1873), travelled with camels from the centre of the continent to the north-west coast; J. Forrest (1874), made an important journey in Western Australia; Giles (1874–76) explored Central Western Australia; Favenc (1878–9), travelled from Brisbane to Port Darwin; A. Forrest (1879), explored part of Northern Australia; Mills (1883) traversed with camels a considerable stretch of new ground in Western Australia; Winnicke (1883–4), also with camels, explored and mapped about 40,000 sq. miles of the unknown interior; Lindsay (1885–6) travelled north-west from Lake Eyre, and then north-east to the Gulf of Carpentaria. He had hoped to find traces of Leichhardt, but was unsuccessful. Various subsequent explorations have also been made. (See the articles on the separate colonies.)

Austra'lioids, one of the five groups into which Professor Huxley classifies man, comprising the indigenous non-Aryan inhabitants of Central and Southern India, the ancient Egyptians and their descendants, and the modern Fellahs.

Austria (in German *Oesterreich*, that is, Eastern Empire), or AUSTRIA-HUNGARY, an extensive duplex monarchy in Central Europe, inhabited by several distinct nationalities, and consisting of two semi-indepen-

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dent countries, each with its own parliament and government, but with one common sovereign, army, and system of diplomacy, and also with a common parliament. The Austrian Empire now has a total area of about 240,000 square miles, and is bounded s. by Turkey, the Adriatic, and Italy; w. by Switzerland, Bavaria, and Saxony; n. by Prussia and Russian Poland; and e. by Russia and Roumania. On the shores of the Adriatic, along the coasts of Dalmatia, Croatia, Istria, &c., lies its only sea frontage, which is of comparatively insignificant extent. Besides the two great divisions of Austria proper, or 'Cisleithan' Austria and Hungary or 'Transleithan' Austria, the Austro-Hungarian monarchy is divided into a number of governments or provinces, as follows:—

DIVISIONS.	Area in sq. m.	Population Dec. 31, 1890.
<i>Austrian Provinces—</i>		
Lower Austria.....	7,654	2,661,799
Upper Austria.....	4,631	785,831
Salzburg.....	2,767	173,510
Styria.....	8,670	1,282,708
Carinthia.....	4,005	361,008
Carniola.....	3,856	498,958
Coast land.....	3,084	695,384
Tyrol and Vorarlberg....	11,324	928,769
Bohemia.....	20,060	5,843,094
Moravia.....	8,583	2,276,870
Silesia.....	1,987	605,649
Galicia.....	30,307	6,607,816
Bukowina.....	4,035	646,591
Dalmatia.....	4,940	527,426
Total Austria.....	115,903	23,895,413
<i>Hungarian Provinces—</i>		
Hungary (including Transylvania).....	108,258	15,122,514
Croatia and Slavonia	16,773	2,184,414
Fiume.....	8	29,001
Total Hungary.....	125,039	17,335,929
Total Austria- Hungary.....	240,942	41,231,342

The estimated population in 1880 was 37,882,712. The largest cities are Vienna, Budapest, Prague, Lemberg, Gratz, Brunn, Szegedin, Trieste, Cracow. Bosnia and Herzegovina, formerly Turkish, but now administered by Austria, have an area of 19,728 square miles. Pop. 1,336,091.

The prevailing character of the Austrian dominions is mountainous or hilly, the plains not occupying more than a fifth part of the

whole surface. The loftiest ranges belong to the Alps, and are found in Tyrol, Styria, Salzburg, and Carinthia, the highest summits being the Ortlerspitzen (12,814 ft.) on the western boundary of Tyrol, and the Grossglockner (12,300) on the borders of Salzburg, Tyrol, and Carinthia. Another great range is that of the Carpathians, bounding Hungary on the north. The most extensive tracts of low or flat land, much of which is very fertile, occur in Hungary, Galicia, and Slavonia, the great Hungarian plain having an area of 36,000 square miles. They stretch along the courses of the rivers, of which the chief are the Danube, with its tributaries the Save, the Drave, the Theiss, the Maros, the Waag, the March, the Raab, the Inn; also the Elbe and Moldau and the Dniester. The Danube for upwards of 800 miles is navigable for pretty large vessels; the tributaries also are largely navigable. The lakes are numerous and often picturesque, the chief being Lake Balaton or the Plattensee. The climate is exceedingly varied, but generally good. The principal products of the north are wheat, barley, oats, and rye; in the centre vines and maize are added; and in the south olives and various fruits. The cereals grow to perfection, Hungarian wheat and flour being celebrated. Other crops are hops, tobacco, flax, and hemp. Wine is largely made, but the wines are inferior on the whole, with exception of a few kinds, including Tokay. The forests cover 70,000 square miles, or one-third of the productive soil of the empire. Sheep and cattle are largely reared.—Wild deer, wild swine, chamois, foxes, lynxes, and a species of small black bear are found in many districts, the fox and lynx being particularly abundant. Herds of a small native breed of horses roam wild over the plains of Hungary.—In mineral productions Austria is very rich, possessing, with the exception of platinum, all the useful metals, the total annual value of the mineral products of the Austrian Empire being estimated at upwards of \$60,000,000, the principal being coal, salt, and iron.

Manufactures are in the most flourishing condition in Bohemia, Moravia, Silesia, and Lower Austria; less so in the eastern provinces, and insignificant in Dalmatia, Bukowina, Herzegovina, &c. Among the most important manufactures are those of machinery and metal goods, Austria holding a high place for the manufacture of musical and scientific instruments, gold and

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silver plate, and jewelry; of stone and china-ware, and of glass, which is one of the oldest and most highly developed industries in Austria; of chemicals; of sugar from beet; of beer, spirits, &c., and especially the manufactures of woollen, cotton, hemp, and flax. The manufacture of tobacco is a state monopoly. Tanning is carried on to a great extent, and in the production of gloves (in Vienna and Prague), Austria stands next to France.

In addition to the general import and export trade Austria carries on a very considerable amount of business in the transit of goods through her territory. In 1889 the total value of imports into Austria-Hungary was 589,000,000 florins, of exports, 766,000,000 florins; the value of imports in 1890, 610,000,000 florins; exports, 771,000,000 florins. Among imports are cotton and other fibres, textile goods and yarn, metals, machinery, drugs, chemicals, oils, fats, hides, skins, &c. The chief exports are cereals, animals, metallic goods, woven fabrics, pottery and glass manufactures. Nearly two-thirds of the commerce is with Germany, next in importance being the trade with Roumania, Italy, and Russia. The exports direct to the United Kingdom in 1890 were £1,728,337, the imports of British produce thence, £1,283,209; these amounts do not include indirect exports and imports through other countries. The staple export to the United Kingdom is corn and flour. The chief imports from it are cotton manufactures, machinery and metals, woollen goods, fish, &c. The mercantile navy of Austria has a total burden of about 325,000 tons. The principal ports are Trieste, Pola, and Fiume. There are about 14,000 miles of railway open. Accounts are kept in gulden or florins of 100 kreutzers each, the florin being nominally = 2s. Practically the chief medium of exchange is bank-notes. The Austrian *centner* or hundredweight = 123½ lbs. *avoirdupois*; the *metze*, the largest dry measure = 1·7 bushel; the *eimer* = 14·94 wine gallons; the *joch* of land = 1·43 English acre.

None of the European states, except Russia, exhibits such a diversity of race and language as the Austrian Empire. The Slavs—who differ greatly, however, amongst themselves in language and civilization—amount to above 16,000,000, or 45 per cent of the total population, and form the great mass of the population of Bohemia, Moravia, Carniola, Galicia, Dalmatia, Croatia,

and Slavonia, and Northern Hungary, and half the population of Silesia and Bukowina. The Germans, about 9,000,000, form almost the sole population of the archduchy of Austria, Salzburg, the greatest portion of Styria and Carinthia, almost the whole of Tyrol and Vorarlberg, large portions of Bohemia and Moravia, the whole of West Silesia, &c.; and they are also numerous in Hungary and Transylvania. The Magyars or Hungarians (6,300,000) form the bulk of the inhabitants of the Kingdom of Hungary and Eastern Transylvania. Of the Italic or Western Romanic stock there are about 700,000, and in the south-east about 2,500,000 of the Roumanian or Eastern Romanic stock. The number of Jews is above 1,000,000; and there are other races, such as the Gypsies (150,000), who are most numerous in Hungary and Transylvania, and the Albanians in Dalmatia and the adjacent parts. The population, generally speaking, decreases in density from west to east.

The state religion of Austria is the Roman Catholic, but the civil power exercises supreme control in all ecclesiastical matters. In 1890 there were in the Austrian portion of the monarchy 18,934,000 Roman Catholics, 2,814,000 Greek Catholics united to the Roman Church, 493,542 non-united, 436,000 Protestants, and 1,143,000 Jews. In Hungary and Transylvania there were 6,478,731 Roman Catholics, 1,486,903 Greek united and 1,931,276 non-united, 3,139,758 Protestants, and 624,680 Jews.

The intellectual culture of the people is highest in the German provinces, but in some of the other provinces the illiterates number as many as 80 to 90 per cent. Yet for a number of years attendance on the elementary schools has been compulsory on all children from their sixth to the end of their twelfth year; and there are higher schools on which attendance is compulsory for young people of thirteen to fifteen years (not elsewhere educated). There are numerous gymnasia and 'real-schools,' the gymnasia being intended chiefly to prepare pupils for the universities, while in the real-schools a more practical end is kept in view, and modern languages and physical science form the groundwork of the educational course; also agricultural, commercial, industrial, art, music, and other special schools. There are eleven universities, viz. in Vienna, Prague (2), Budapest, Gratz, Cracow, Lemberg, Innsbruck, Klausenburg, Agram, and

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Czernowitz. Most of these have four faculties—Catholic theology, law and politics, medicine, and philosophy.

The ruler of the Austro-Hungarian monarchy has the title of emperor so far as concerns his Austrian dominions, but he is only king of Hungary. All matters affecting the joint interests of the two divisions of the empire, such as foreign affairs, war, and finance, are dealt with by a supreme body known as the Delegations—a parliament of 120 members, one-half of whom are chosen by and represent the legislature of German Austria and the other half that of Hungary. The legislative centre of the Austrian division of the empire is the Reichsrath, or council of the realm, consisting of an upper house (Herrenhaus), composed of princes of the imperial family, nobles with the hereditary right to sit, archbishops and life-members nominated by the emperor; and a lower house (Abgeordnetenhaus) of 353 elected deputies. There are seventeen provincial diets or assemblies, each provincial division having one. In the Hungarian division of the empire the legislative power is vested in the king and the diet or Reichstag conjointly, the latter consisting of an upper house or house of magnates and of a lower house or house of representatives, the latter elected by all citizens of full age paying direct taxes to the amount of 16s. a year. The powers of the Hungarian Reichstag correspond to those of the Reichsrath of the Cisleithan provinces. There being three distinct parliaments in the empire, there are also three budgets, that, viz. for the whole empire, that for Cisleithan, and that for Transleithan Austria. The budget estimates for the whole empire for 1892 were 979,288,494 florins (the revenue balancing the expenditure); for Cisleithan Austria (1892) revenue was estimated at 585,954,126 florins, and expenditure 583,947,553 florins; and for Transleithan Austria the estimated revenue and expenditure were 395,353,936 florins and 395,340,941 florins respectively. A small portion of the imperial revenue of Austria is derived from customs and other sources, 70 per cent. of the remainder being made up by the Cisleithan and 30 per cent. by the Transleithan divisions of the empire. The debt of the empire (1891) is 5,620,185,000 florins.

Military service is obligatory on all citizens capable of bearing arms who have attained the age of twenty. The period of service is twelve years, of which three are passed in the line, seven in the reserve, and two

in the landwehr. The army numbers over 290,000 men (including officers) on the peace-footing and over 1,500,000 on the war-footing. The most important portion of the Austrian navy comprises 12 iron-clads, of from 5 to 14-inch armour, the largest having a tonnage of over 7000, and carrying 27-ton guns; besides gun-boats, torpedo vessels, and other vessels, mostly small and intended for coast defence. The crews number about 10,000 officers and men.

History.—In 791 Charlemagne drove the Avars from the territory between the Ens and the Raab, and united it to his empire under the name of *the Eastern Mark* (that is March or boundary land); and from the establishment by him of a margraviate in this new province the present empire took its rise. On the invasion of Germany by the Hungarians it became subject to them from 900 till 955, when Otho I., by the victory of Augsburg, reunited a great part of this province to the German Empire, which by 1043 had extended its limits to the Leitha. The margraviate of Austria was hereditary in the family of the counts of Babenberg (Bamberg) from 982 till 1156, in which year the boundaries of Austria were extended so as to include the territory above the Ens, and the whole was created a duchy. The territory was still further increased in 1192 by the gift of the duchy of Styria as a fief from the Emperor Henry VI., Vienna being by this time the capital. The male line of the house of Bamberg became extinct in 1246, and the Emperor Frederick II. declared Austria and Styria a vacant fief, the hereditary property of the German emperors. In 1282 the Emperor Rudolph granted Austria, Styria, and Carinthia, to his two sons, Albert and Rudolph. The former became sole ruler (duke), and since then Austria has been under the still-reigning house of Hapsburg. Albert, who was an energetic ruler, was elected emperor in 1298, but was assassinated in 1308. The first of his successors, we need specially mention, was Albert V., son-in-law of the Emperor Sigismund. He assisted Sigismund in the Hussite wars, and was elected after his death King of Hungary and of Bohemia, and German emperor (1438). Ladislaus, his posthumous son, was the last of the Austrian line proper, and its possessions devolved upon the collateral Styrian line in 1457; since which time the house of Austria furnished an unbroken succession of German emperors.

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In 1453 the Emperor Frederick III., a member of this house, had conferred upon the country the rank of an archduchy before he himself became ruler of all Austria. His son Maximilian I., by his marriage with Mary, the surviving daughter of Charles the Bold, united the Netherlands to the Austrian dominions. After the death of his father in 1493 Maximilian was made Emperor of Germany, and transferred to his son Philip the government of the Netherlands. He also added to his paternal inheritance Tyrol, with several other territories, particularly some belonging to Bavaria, and acquired for his family new claims to Hungary and Bohemia. The marriage of his son Philip to Joanna of Spain raised the house of Hapsburg to the throne of Spain. Philip, however, died in 1506, and the death of Maximilian in 1519 was followed by the union of Spain and Austria; his grandson (the eldest son of Philip), Charles I., king of Spain, being elected Emperor of Germany as Charles V. Charles thus became the greatest monarch in Europe, but in 1521 he ceded to his brother Ferdinand all his dominions in Germany. Ferdinand I., by his marriage with Anna, the sister of Louis II., king of Hungary, acquired the kingdoms of Hungary and Bohemia, with Moravia, Silesia, and Lusatia, the appendages of Bohemia. To oppose him the waywode of Transylvania, John Zapolya, sought the help of the sultan, Soliman II., who appeared in 1529 at the gates of Vienna, but was compelled to retreat. In 1535 a treaty was made by which John von Zapolya was allowed to retain the royal title and half of Hungary, but after his death new disputes arose, and Ferdinand maintained the possession of Lower Hungary only by paying Soliman the sum of 30,000 ducats annually (1562). In 1556 Ferdinand obtained the imperial crown, when his brother Charles laid by the sceptre for a cowl. He died in 1564, leaving his territories to be divided amongst his three sons.

Maximilian II., the eldest, succeeded his father as emperor, obtaining Austria, Hungary, and Bohemia; Ferdinand, the second son, received Tyrol and Hither Austria; and Charles, the youngest, obtained Styria, Carinthia, Carniola, and Görz. Maximilian died in 1576, and was succeeded in the imperial throne by his eldest son Rudolph II., who had already been crowned King of Hungary in 1572, and King of Bohemia, in 1575. Rudolph's reign was

distinguished by the war against Turkey and Transylvania; the persecutions of the Protestants, who were driven from his dominions; the cession of Hungary in 1608; and in 1611 of Bohemia and his hereditary estates in Austria to his brother Matthias. Matthias, who succeeded Maximilian on the imperial throne, concluded a peace with the Turks, but was disturbed by the Protestant Bohemians, who took up arms in defence of their religious rights, thus commencing the Thirty Years' War. After his death in 1619 the Bohemians refused to acknowledge his successor, Ferdinand II., until after the battle of Prague in 1620, when Bohemia had to submit, and was deprived of the right of choosing her king. Lutheranism was strictly forbidden in all the Austrian dominions. Hungary, which revolted under Bethlen Gabor, prince of Transylvania, was, after a long struggle, subdued. During the reign of Ferdinand III. (1637-57), successor of Ferdinand II., Austria was continually the theatre of war; Lusatia was ceded to Saxony in 1635; and Alsace to France in 1648, when peace was restored in Germany by the Treaty of Westphalia.

The Emperor Leopold I., son and successor of Ferdinand III., was victorious through the talents of Eugene in two wars with Turkey; and Vienna was delivered by Sobieski and the Germans from the attacks of Kara Mustapha in 1683. In 1687 he united Hungary to Transylvania, and in 1699 restored to Hungary the country lying between the Danube and the Theiss. It was the chief aim of Leopold to secure to Charles, his second son, the inheritance of the Spanish monarchy, and in 1701, upon the victory of French diplomacy in the appointment of the grandson of Louis XIV., the war of the Spanish succession commenced. Leopold died in 1705, but Joseph I., his eldest son, continued the war. As he died without children in 1711, his brother Charles was elected emperor, but was obliged to accede in 1714 to the Peace of Utrecht, by which Austria received the Netherlands, Milan, Mantua, Naples, and Sardinia. In 1720 Sicily was given to Austria in exchange for Sardinia. This monarchy now embraced over 190,000 square miles; but its power was weakened by new wars with Spain and France. In the peace concluded at Vienna (1735 and 1738) Charles VI. was forced to cede Naples and Sicily to Spain and part of Milan to the King of Sardinia; and in

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1739, by the Peace of Belgrade, he was obliged to transfer to the Porte Belgrade, Servia, &c., partly in order to secure the succession to his daughter Maria Theresa by the Pragmatic Sanction. He died in 1740.

On the marriage of Maria Theresa with Stephen, duke of Lorraine (the dynasty henceforth being that of Hapsburg-Lorraine), and her accession to the Austrian throne, the empire was threatened with dismemberment. Frederick II. of Prussia subdued Silesia; the Elector of Bavaria was crowned in Lintz and Prague, and in 1742 chosen emperor under the name of Charles VII.; Hungary alone supported the heroic and beautiful queen. Charles, however, died in 1745, and the husband of Theresa was crowned Emperor of Germany as Francis I.; but a treaty concluded in 1745 confirmed to Frederick the possession of Silesia, and by the Peace of Aix-la-Chapelle, 1748, Austria was obliged to cede the duchies of Parma, Piacenza, and Guastalla to Philip, Infant of Spain, and several districts of Milan to Sardinia. To recover Silesia Maria Theresa formed an alliance with France, Russia, Saxony, and Sweden, and entered upon the Seven Years' War; but by the Peace of Hubertsberg, 1763, Silesia was recognized as Prussian territory. On the death of Francis I. in 1765 Joseph II., his eldest son, was appointed to assist his mother in the government and elected Emperor of Germany. The partition of Poland (1772) gave Galicia and Lodomeria to Austria, which also obtained Bukowina from the Porte in 1777. At the death of the empress in 1780 Austria contained 235,000 square miles, with a pop. estimated at 24,000,000.

The liberal home administration of the empress was continued and extended by her successor, Joseph II., who did much to further the spread of religious tolerance, education, and the industrial arts. The Low Countries, however, revolted, and he was unsuccessful in the war of 1788 against the Porte. His death took place in 1790. He was succeeded by his eldest brother, Leopold II., under whom peace was restored in the Netherlands, and in Hungary, and also with the Porte. On the death of his sister and her husband Louis XVI. of France he formed an alliance with Prussia, but died in 1792, before the French revolutionary war broke out.

His son, Francis II., succeeded, and was elected German emperor, by which time France had declared war against him as King

of Hungary and Bohemia. In 1795, in the third division of Poland, West Galicia fell to Austria, and by the Peace of Campo-Formio (1797) she received the largest part of the Venetian territory as compensation for her loss of Lombardy and the Netherlands. In 1799 Francis, in alliance with Russia, renewed the war with France until 1801, when the Peace of Lunéville was concluded. In 1804 Francis declared himself hereditary Emperor of Austria as Francis I., and united all his states under the name of the Empire of Austria, immediately taking up arms once more with his allies Russia and Great Britain against France. The war of 1805 was terminated by the Peace of Pressburg (Dec. 26), by which Francis had to cede to France the remaining provinces of Italy, as well as to give up portions of territory to Bavaria, Würtemberg, and Baden, receiving in return Salzburg and Berchtesgaden. After the formation of the Confederation of the Rhine (July 12, 1806) Francis was forced to resign his dignity as Emperor of Germany, which had been in his family more than 500 years. A new war with France in 1809 cost the monarchy 42,380 square miles of territory and 3,500,000 subjects. Napoleon married Maria Louisa, daughter of the emperor, and in 1812 concluded an alliance with him against Russia. But in 1813 Francis again declared war against France, and formed an alliance with Britain, Russia, Prussia, and Sweden against his son-in-law. By the Congress of Vienna (1815) Austria gained Lombardy and Venetia, and recovered, together with Dalmatia, the hereditary territories which it had been obliged to cede.

In the troubled period following the French revolution of 1830 insurrections took place in Modena, Parma, and the Papal States (1831-32), but were suppressed without much difficulty; and though professedly neutral during the Polish insurrections Austria clearly showed herself on the side of Russia, with whom her relations became more intimate as those between Great Britain and France grew more cordial. The death of Francis I. (1835) and accession of his son Ferdinand I. made little change in the Austrian system of government, and much discontent was the consequence. In 1846 the failure of the Polish insurrection led to the incorporation of Cracow with Austria. In Italy the declarations of Pio Nono in favour of reform increased the difficulties of Austria, and in Hungary the opposition under

Kossuth and others assumed the form of a great constitutional movement. In 1848, when the expulsion of Louis Philippe shook all Europe, Metternich found it impossible any longer to guide the helm of the state, and the government was compelled to admit a free press and the right of citizens to arms. Apart from the popular attitude in Italy and in Hungary, where the diet declared itself permanent under the presidency of Kossuth, the insurrection made equal progress in Vienna itself, and the royal family, no longer in safety, removed to Innsbruck. After various ministerial changes the emperor abdicated in favour of his nephew, Francis Joseph; more vigorous measures were adopted; and Austria, aided by Russia, reduced Hungary to submission.

The year 1855 is memorable for the Concordat with the pope, which put the educational and ecclesiastical affairs of the empire entirely into the hands of the Papal see. In 1859 the hostile intentions of France and Sardinia against the possessions of Austria in Italy became so evident that she declared war by sending an army across the Ticino; but after disastrous defeats at Magenta and Solferino she was compelled to cede Milan and the north-west portion of Lombardy to Sardinia. In 1864 she joined with the German states in the spoliation of Denmark, but a dispute about Schleswig-Holstein involved her in a war with her allies (1866), while at the same time Italy renewed her attempts for the recovery of Venice. The Italians were defeated at Custozza and driven back across the Mincio; but the Prussians, victorious at Königgrätz (or Sadowa), threatened Vienna. Peace was concluded with Prussia on Aug. 23 and with Italy on Oct. 3, the result of the war being the cession of Venetia through France to Italy and the withdrawal of Austria from all interference in the affairs of Germany.

Since 1866 Austria has been occupied chiefly with the internal affairs of the empire. Hungarian demands for self-government were finally agreed to, and the Empire of Austria divided into the two parts already mentioned—the Cisleithan and the Transleithan. This settlement was consummated by the coronation of the Emperor Francis Joseph I., at Budapest, as King of Hungary, on the 8th of June, 1867. In the same year the Concordat of 1855 came up for discussion, and measures were passed for the re-establishment of civil marriage, the eman-

cipation of schools from the domination of the church, and the placing of different creeds on a footing of equality. The fact of the Austro-Hungarian dominions comprising so many different nationalities has always given the central government much trouble, both in regard to internal and to external affairs. In regard to the 'Eastern Question,' for instance, the action of Austria has been hampered by the sympathies shown by the Magyars for their blood relations, the Turks, while the Slavs have naturally been more favourable to Russia. During the war between Russia and Turkey in 1877-78 Austria remained neutral; but at its close, in the middle of 1878, it was decided, at the Congress of Berlin, that the provinces of Bosnia and Herzegovina should be administered by Austria instead of Turkey. In 1888 a treaty between Austria and Germany was published, by which each agreed to assist the other in case of an attack by Russia.

Auteuil (ō-tè-yè), formerly a suburban village of Paris, but now inclosed within the fortifications.

Autochthones (a-tok'tho-nēz), the Greek name for the aboriginal inhabitants of a country.

Au'tocrat (Gr. *autos*, self, *kratos*, rule), an absolute or uncontrolled ruler; the head of a state who is not controlled by any constitutional limitations; such as the Emperor of Russia.

Auto de fe (Spanish); **Auto da Fe** (Portuguese), lit. 'act of faith.' See *Inquisition*.

Autoharp, a musical instrument like the zither, but arranged with movable dampers to produce the various cords as the strings are touched.

Au'tograph, a person's own handwriting; an original manuscript or signature, as opposed to a copy. The practice of collecting autographs or signatures dates at least from the sixteenth century, among the earliest collections known being those of Loménie de Brienne and Lacroix du Maine.

Autom'atism, the confinement of activity in men or animals within a purely mechanical limit, resulting from injury to or partial removal of the brain.

Autom'aton (Greek *automatos*, spontaneous), a self-moving machine performing actions like those of a living being, and often shaped like one. The walking statues of Dædalus, the flying dove of Archytas, the brazen head of Friar Bacon, the iron fly of Regiomontanus, the door-opening figure of Albertus Magnus, the parading knights of

the clock presented to Charlemagne by Harun al Rashid, the toy carriage and attendants constructed by Camus for Louis XIV., the flute-player, tambour-player, and duck of Vaucanson, and the writing child of the brothers Droz are among the more noteworthy of traditional automata.

Automobile, CARRIAGE, an automatic-propelling vehicle the motive power of which is furnished by coal-oil, gasoline, electric-storage battery, compressed air, etc. They are usually supplied with two gearings, one for a low rate of speed and the second for more rapid movement. They are largely in use in London and Paris, taking the place of the horse-drawn cabs and omnibusses. One company in the former city has upward of 400 automobile cabs in service. The engine or dynamo is usually placed beneath the driver's seat and connects with chains or cranks to the rear axles, leaving the forecarriage free for steering operations.

Autom'olite. See *Gahnite*.

Auton'omy, the power of a state, institution, &c., to legislate for itself.

Autoph'agi (-jī), birds which feed themselves as soon as hatched.

Au'toplasty, the operation by which wounds and diseased parts are repaired with healthy tissue taken from other parts of the same person's body.

Au'topsy, a post-mortem examination.

Au'totype. See *Photogravure*.

Autumn, the season between summer and winter, in the northern hemisphere often regarded as embracing August, September, and October, or three months about that time. The beginning of the astronomical autumn is September 22, the autumnal equinox; and the end is December 21, the shortest day. The autumn of the southern hemisphere takes place at the time of the northern spring.

Autun (ō-tūn; ancient *Bibracte*, later *Augustodunum*), a town, South-eastern France, department of Saône-et-Loire. It has two Roman gates of exquisite workmanship, the ruins of an amphitheatre and of several temples, the cathedral of St. Lazare, a fine Gothic structure of the eleventh century; manufactures of carpets, woollens, cotton, velvet, hosiery, &c. Pop. 11,462.

Auvergne (ō-vār-nyè), a province, Central France, now merged into departments Cantal and Puy-de-Dôme, and an arrondissement of Haute-Loire. The Auvergne

Mountains, separating the basins of the Allier, Cher, and Creuse from those of the Lot and Dordogne, contain the highest points of Central France: Mount Dor, 6188 feet; Cantal, 6093 feet, and Puy-de-Dôme, 4806 feet. The number of extinct volcanoes and general geologic formation make the district one of great scientific interest. The minerals include iron, coal, copper, and lead, and there are warm and cold mineral springs. Auvergne contributes a large supply to the labour markets of Paris and Belgium, there being in Paris alone some 50,000 Auvergnats.

Auxerre (ō-sār), a town, France, department of Yonne, 110 miles S.E. of Paris. Principal edifices: a fine Gothic cathedral, unfinished; the abbey of St. Germain, with curious crypts; and an old episcopal palace, now the Hôtel de Prefecture; it manufactures woollens, hats, casks, leather, earthen ware, violin strings, &c.; trade, chiefly in wood and wines, of which the best known is white Chablis. Pop. 15,497.

Auxom'eter, an instrument to measure the magnifying powers of an optical apparatus.

Auxonne (ō-son; anc. *Aussona*), a town, France, department of Côte-d'Or (Burgundy), on the Saône; a fortified place, with some manufactures. Pop. 5911.

A'va, a town in Asia, formerly the capital of Burmah, on the Irrawady, now almost wholly in ruins.

Ava-Ava, ARVA, KAVA, or YAVA (*Macropiper methysticum*), a plant of the nat. order Piperaceæ (pepper family), so called by the inhabitants of Polynesia, who make an intoxicating drink out of it. Its leaves are chewed with betel in South-eastern Asia.

Avad'avat. Same as *Amadavat*.

Av'alanches, large masses of snow or ice precipitated from the mountains, and distinguished as *wind* or *dust avalanches*, when they consist of fresh-fallen snow whirled like a dust storm into the valleys; as *sliding avalanches*, when they consist of great masses of snow sliding down a slope by their own weight; and as *glacier* or *summer avalanches*, when ice-masses are detached by heat from the high glaciers.

Avâl Islands. Same as *Bahrein Islands*.

Avallon (à-và-lōn), a town of Central France, dep. Yonne. Pop. 5597.

Av'alon, a sort of fairy land or elysium mentioned in connection with the legends of King Arthur, being his abode after disappearing from the haunts of men: called also

Avilion. The name is also identified with Glastonbury; and has been given to a peninsula of Newfoundland.

Avan'turine, AVEN'TURINE, a variety of quartz containing glittering spangles of mica through it; also a sort of artificial gem of similar appearance.

Av'ars, a nation, probably of Turanian origin, who at an early period may have migrated from the region east of the Tobol in Siberia to that about the Don, the Caspian Sea, and the Volga. A part advanced to the Danube in 555 A.D., and settled in Dacia. They served in Justinian's army, aided the Lombards in destroying the kingdom of the Gepidæ, and in the sixth century conquered under their khan Bajan the region of Pannonia. They then won Dalmatia, pressed into Thuringia and Italy against the Franks and Lombards, and subdued the Slavs dwelling on the Danube, as well as the Bulgarians on the Black Sea. But they were ultimately limited to Pannonia, where they were overcome by Charlemagne, and nearly extirpated by the Slavs of Moravia. After 827 they disappear from history. Traces of their fortified settlements are found, and known as Avarian rings.

Avatar', more properly AVATARA, in Hindu mythology, an incarnation of the Deity. Of the innumerable avatars the chief are the ten incarnations of Vishnu, who appeared successively as a fish, a tortoise, a boar, &c.

Avatch'a, a volcano and bay in Kamtchatka. The volcano, which is 9000 ft. high, was last active in 1855. The town of Petropavlovsk lies in the bay.

Avebury (āv'be-ri), a village of England, in Wiltshire, occupying the site of a so-called Druidical temple, which originally consisted of a large outer circle of 100 stones, from 15 to 17 feet in height, and about 40 feet in circumference, surrounded by a broad ditch and lofty rampart, and inclosing two smaller circles. Few traces now remain of the structure. On the neighbouring downs are numerous barrows or tumuli, one of which, called Silbury Hill, rises to the height of 130 feet, with a circumference of 2027 feet at the base, covering an area of more than 5 acres.

Aveiro (ā-vā'i-rū), a coast town in Portugal, province of Douro, with a cathedral, an active fishery, and a thriving trade. Pop. 6557.

Avellino (ā-vel-lē'nō), a town in Southern Italy, capital of the province of Avellino,

29 m. east of Naples, the seat of a bishop. Avellino nuts were celebrated under the Romans. Pop. 16,376. Area of the prov. 1409; pop. 419,688.

A've Mari'a ('Hail, Mary'), the first two words of the angel Gabriel's salutation (Luke i. 28), and the beginning of the very common Latin prayer to the Virgin in the Roman Catholic Church. Its lay use was sanctioned at the end of the twelfth century, and a papal edict of 1326 ordains the repetition of the prayer thrice each morning, noon, and evening, the hour being indicated by sound of bells called the Ave Maria or Angelus Domini. The prayers are counted upon the small beads of the rosary, as the Paternosters are upon the large ones.

Ave'na, the oat genus of plants. See *Oat*.

Av'ens, a European plant, of the genus *Geum*. Common avens, or herb-bennet, *G. urbānum*, possesses astringent properties. The American species, *G. rivale*, has the same properties; it is a fine plant.

Av'entaille, the movable face-guard of the helmet, through which the warrior breathed.

Aven'turine. See *Avanturine*.

Av'erge, in maritime law, any charge or expense over and above the freight of goods, and payable by their owner.—*General average* is the sum falling to be paid by the owners of ship, cargo, and freight, in proportion to their several interests, to make good any loss or expense intentionally incurred for the general safety of ship and cargo, *e.g.* throwing goods overboard, cutting away masts, port dues in cases of distress, &c.—*Particular average* is the sum falling to be paid for unavoidable loss when the general safety is not in question, and therefore chargeable on the individual owner of the property lost. A policy of insurance generally covers both general and particular average, unless specially excepted.

Aver'nus, a lake, now called *Lago d'Averno*, in Campania, Italy, between the ancient Cumæ and Puteoli, about 8 m. from Naples. It occupies the crater of an old volcano, and is in some places 180 feet deep. Formerly the gloom of its forest surroundings and its mephitic exhalations caused it to be regarded as the entrance to the infernal regions. It was the fabled abode of the Cimmerians, and especially dedicated to Proserpine.

Averroes (a-ver'o-es; corrupted from *Ibn Roshd*), the most renowned Arabian philosopher, born at Cordova, in Spain, probably between 1120 and 1149. His

ability procured him the succession to his father's office of chief magistrate, and the King of Marocco appointed him at the same time *cadi* in the province of Mauretania. Accused of being an infidel, he was, however, deprived of his offices, and banished to Spain; but, being persecuted there also, he fled to Fez, where he was condemned to recant and undergo public penance. Upon this he went back to his own country, where the Caliph Almansur finally restored him to his dignities. He died at Marocco, the year of his death being variously given as 1198, 1206, 1217, and 1225. Averroes regarded Aristotle as the greatest of all philosophers, and devoted himself so largely to the exposition of his works as to be called among the Arabians *The Interpreter*. He wrote a compendium of medicine, and treatises in theology, philosophy, jurisprudence, &c. His commentaries upon Aristotle appeared before 1250 in a Latin translation attributed to Michael Scott and others.

Averrunca'tor, a garden implement for pruning trees without a ladder, consisting of two blades similar to stout shears, one fixed rigidly to a long handle, and the other moved by a lever to which a cord passing over a pulley is attached.

Aver'sa, a well-built town of Southern Italy, 7 miles N. of Naples, in a beautiful vine and orange district, the seat of a bishop, with a cathedral and various religious institutions, and an excellently-conducted lunatic asylum. Andreas of Hungary, husband of Queen Joanna I., was strangled in a convent here, Sept. 18, 1345. Pop. 21,473.

Avesnes (ä-vän), a town of France, dep. Nord. Pop. 5468.

Avesta. See *Zendavesta*.

Aveyron (ä-vā-rōn), a department occupying the southern extremity of the central plateau of France, traversed by mountains belonging to the Cevennes and the Cantal ranges; principal rivers: Aveyron, Lot, and Tarn, the Lot alone being navigable. The climate is cold, and agriculture is in a backward state, but considerable attention is paid to sheep-breeding. It is noted for its 'Roquefort cheese.' It has coal, iron, and copper mines, besides other minerals. Area, 3340 sq. miles; capital, Rhodéz. Pop. 1891, 400,467.

Avezzano (ä-vet-zä'nō), a town of S. Italy, prov. Aquila. Pop. 6375.

Av'iary, a building or inclosure for keeping, breeding, and rearing birds. Aviaries appear to have been used by the Persians,

Greeks, and Romans, and are highly prized in China. In England they were in use at least as early as 1577, when William Harrison refers to 'our costlie and curious aviaries.' An aviary may be simply a kind of very large cage; but the term usually has a wider scope than this.

Avicen'na, or **EBN-SINA**, an Arabian philosopher and physician, born near Bokhara, A.D. 980. After practising as a physician he quitted Bokhara at the age of 22, and for a number of years led a wandering life, settling at last at Hamadan, latterly as vizier of the emir. On the death of his patron he lived in retirement at Hamadan, but having secretly offered his services to the Sultan of Ispahan he was imprisoned by the new emir. Escaping, he fled to Ispahan, was received with great honour by the sultan, and passed there in quietness the last fourteen years of his life, writing upon medicine, logic, metaphysics, astronomy, and geometry. He died in 1037, leaving many writings, mostly commentaries on Aristotle. Of his 100 treatises the best known is the *Canon Medicinæ*, which was still in use as a text-book at Louvain and Montpellier in the middle of the seventeenth century.

Avie'nus, **RUFUS FESTUS**, a Latin descriptive poet, who flourished about the end of the fourth century after Christ, and wrote *Descriptio Orbis Terræ*, a general description of the earth; *Ora Maritima*, an account of the Mediterranean coasts, &c.

Avifau'na, a collective term for the birds of any region.

Avigliano (ä-vēl-yä'nō), a town of S. Italy, prov. Potenza. Pop. 13,057.

Avignon (ä-vē-nyōn; ancient, *Avenio*), an old town of S.E. France, capital of department Vaucluse, on the left bank of the Rhone; inclosed by lofty battlemented and turreted walls, well built, but with rather narrow streets. It is an archbishop's see, and has a large and ancient cathedral on a rock overlooking the town, the immense palace in which the popes resided (now barracks), and other old buildings. The industries of the city are numerous and varied, the principal being connected with silk. The silk manufacture and the rearing of silk-worms are the principal employments in the district. Here Petrarch lived several years, and made the acquaintance of Laura, whose tomb is in the Franciscan church. From 1309 to 1376 seven popes in succession, from Clement V. to Gregory XI., re-

sided in this city. After its purchase by Pope Clement VI. in 1348 Avignon and its district continued, with a few interruptions, under the rule of a vice-legate of the pope's till 1791, when it was formally united to the French Republic. Pop. 1891, 43,453.

Avignon Berries. See *French Berries*.

Avila (ä'vê-là), town of Spain, capital of province of Avila, a modern division of Old Castile. See of Bishop suffragan of Santiago, with fine cathedral. Once one of the richest towns of Spain. Principal employment in the town, spinning; in the province, breeding sheep and cattle. Pop., town, 9199; province, 187,211.

Avila, GIL GONZALEZ D', a Spanish antiquary and biographer, 1577-1658; made historiographer of Castile in 1612, and of the Indies in 1641. Most valuable works: *Teatro de las Grandezas de Madrid*, 16-3, and *Teatro Ecclesiastico*, 1645-53.

Avila y Zuñiga (ä'vê-là ē thö-nyē'gä), DON LUIS D', Spanish general, diplomatist, and historian; a favourite of Charles V.; born about 1490, died after 1552. His chief work, translated into five or six languages, was on the war of Charles V. in Germany.

Aviles (ä-vê'les), a town of Northern Spain, prov. Oviedo, with a good harbour. Pop. 9000.

Aviz, an order of knighthood in Portugal, instituted by Sancho, its first king, and having as its original object the subjection of the Moors.

Avizan'dum, in Scots law, private consideration. To make *avizandum* is to remove a cause from the public court to the private consideration of the judge.

Avlo'na, a seaport of Turkish Albania on the Adriatic, with a considerable trade. Pop. 5000.

Avoca'do-pear. See *Alligator-pear*.

Av'ocet. See *Avoset*.

Avogad'ro's Law, in physics, asserts that equal volumes of different gases at the same pressure and temperature contain an equal number of molecules.

Avoirdupois (a-vêr'dü-pois; from old French, lit. 'goods of weight'), a system of weights used for all goods except precious metals, gems, and medicines, and in which a pound contains 16 ounces, or 7000 grains, while a pound troy contains 12 ounces, or 5760 grains. A hundredweight contains 112 pounds avoirdupois; a *cental* of 100 pounds is common in America, and is a legal British weight.

Av'ola, a seaport on the east of Sicily,

with a trade in almonds, sugar, &c. Pop. 12,540.

A'von, the name of several rivers in England, of which the principal are: (1.) The Upper Avon, rising in Leicestershire, and flowing s.w. into the Severn at Tewkesbury. Stratford-on-Avon lies on this river; (2.) The Lower Avon, rising in Gloucestershire, and falling into the Severn n.w. of Bristol; navigable as far as Bath; (3.) In Monmouthshire; (4.) In Wiltshire and Hampshire, entering the English Channel at Christchurch Bay. There are also streams of this name in Wales and Scotland.

Av'oset, a bird about the size of a lapwing, of the genus *Recurvirostra* (*R. avosetta*), family Scolopacidæ (snipes), order Grallatores. The bill is long, slender, elastic, and



Avoset (*Recurvirostra avosetta*).

bent upward toward the tip, the legs long, the feet webbed, and the plumage variegated with black and white. The bird feeds on worms and other small animals, which it scoops up from the mud of the marshes and fens that it frequents. It is found in Europe, Asia, Africa, and America; but the American species is slightly different from the other.

Avranches (ä vränsh; anc. *Abrincæ*), a town, France, department La Manche, about 3 miles from the Atlantic. It formerly had a fine cathedral. Manufactures: lace, thread, and candles. Pop. 8642.

Awe (ä), a Scottish lake in Argyleshire, about 28 miles long by 2 broad, and communicating by the Awe with Loch Etive. Ben Cruachan stands at its northern extremity. It has many islands and beautiful scenery, and abounds in trout, salmon, &c.

Axe (or Ax), a well-known tool for cutting or chipping wood, consisting of an iron head with an arched cutting edge of steel, which is in line with the wooden handle of the tool, and not at right angles to it as in the adze.

Axel. See *Absalom*.

Axe-stone, a mineral, a variety of nephrite or jade, used by the natives of New Zealand and South Pacific Islands for axes, &c. See *Jade*.

Axholme Isle (aks'ōm), a sort of island in England formed by the rivers Trent, Idle, and Don, in the north-west angle of Lincolnshire, 17 miles long, $4\frac{1}{2}$ broad.

Axil, **AXILLA**, in botany, the angle between the upper side of a leaf and the stem or branch from which it springs.

Buds usually appear in the axils, and flowers or flower-stalks growing in this way are called *axillary*.

Ax'im, a town of W. Africa, on the Gold Coast.

Ax'inite, a mineral, a silicate of alumina, lime, &c., with boracic acid, deriving its name from the form of the crystals, the edges of which bear some resemblance to the edge of an axe.

Axin'omancy, an ancient method of divination by the movements of an axe (Gr. *axinē*) balanced on a stake, or of an agate placed on a red-hot axe. The names of suspected persons being uttered, the movements at a particular name indicated the criminal.

Axiom, a universal proposition, which our understanding must perceive to be true as soon as it perceives the meaning of the words, and therefore called a *self-evident truth*: e.g. *A is A*. In mathematics, axioms are those propositions which are assumed without proof, as being in themselves independent of proof, and which are made the basis of all the subsequent reasoning; as, 'The whole is greater than its part'; 'Things that are equal to the same thing are equal to one another.'

Axis, the straight line, real or imaginary, passing through a body or magnitude, on which it revolves, or may be supposed to revolve; especially a straight line with regard to which the different parts of a magnitude, or several magnitudes, are symmetrically arranged; e.g. the *axis of the world*, the imaginary line drawn through its two poles.

In botany the word is also used, the stem being termed the *ascending axis*, the root the *descending axis*.

In anatomy the name is given to the

second vertebra from the head, that on which the *atlas* moves. See *Atlas*.

Axis (*Cervus axis*), a species of Indian deer, also known as the Spotted Hog-deer, of a rich fawn colour, nearly black along the back, with white spots, and under parts white. Breeds freely in many parks in Europe.

Ax'minster, a market town, England, county Devon, on the Axe, at one time celebrated for its woollen cloth and carpet manufactures, and giving name to an expensive variety of carpet having a thick soft pile, and also to a cheaper variety. Pop. of town and parish, 2872.

Ax'olotl (*Amblystoma maculatum*), a curious Mexican amphibian, not unlike a newt, from 8 to 10 inches in length, with gills formed of three long ramified or branch-like processes floating on each side of the neck. It reproduces by laying eggs, and was for some time regarded as a perfect animal with permanent gills. It is said, however, that they frequently lose their gills like the other members of the genus, though some authorities maintain that the true axolotl never loses its gills, and that merely confusion with *A. tigrinum* has led to the belief, as this species sometimes retains its branchiæ, though usually it loses them. The axolotl is esteemed a luxury by the Mexicans. There are a number of species of *Amblystoma* in N. America.

Ax'um, a town in Tigré, a division of Abyssinia, once the capital of an important kingdom, and at one time the great depot of the ivory trade in the Red Sea. The site of the town still exhibits many remains of its former greatness; but modern Axum is only a miserable village.

Ayacucho (ä-yä-kö'chō), the name of a department of Peru, and of its capital. The dep. has an area of 24,213 sq. miles; a pop. of 142,205. The town (formerly Guamanga or Huamanga) has a cathedral and a university, and a pop. of 9387.

Ayala (ä-yä'là), PEDRO LOPEZ DE, Spanish historian and poet, chancellor of Castile in the second half of the fourteenth century, and the author of a history of Castile during 1350-96. He took an active part in the struggle between Henry II. and Pedro the Cruel, and was taken prisoner by the English in 1367. During his English captivity he wrote part of his chief poetical work, a Book in Rhyme concerning Court Life. Died, 1407.

Ayamonte (ä-yä-mon'tā), a seaport town,



Spain, province of Huelva, 2 miles from the mouth of the Guadiana. Pop. 6000.

Ayas'oluk, the modern representative of ancient Ephesus.

Aye-aye (ī-ī; *Cheirōmys madagascariensis*), an animal of Madagascar, so called from its cry, now referred to the lemur family. It is about the size of a hare, has large flat ears and a bushy tail; large eyes; long sprawling fingers, the third so slender as to appear shrivelled; colour, musk-



Aye-aye
(*Cheirōmys madagascariensis*).

brown, mixed with black and gray ash; feeds on grubs, fruits, &c.; habits, nocturnal.

Ayesha (a-yesh'a), daughter of Abu-Bekr and favourite wife of Mohammed, the Arabian prophet, though she bore him no child; born in 610 or 611. After his death she opposed the succession of Ali, but was defeated and taken prisoner. She died at Medina in 677 or 678 (A.H. 58).

Aylesbury (ālz'be-ri), county town of Buckinghamshire, England, with a fine old parish church; chief industries, silk-throwing, printing, making condensed milk, and poultry-rearing for the London market. Previous to 1885 it and its hundred sent two members to parliament, and it still gives name to a parliamentary division. Pop. 8674.

Ayloff, Sir JOSEPH, an English antiquary, born about 1708, died 1781; one of the first council of the Society of Antiquaries, a commissioner for the preservation of state papers, and author and editor of several works, of which the best known is his *Calendars of the Auntient Charters*, &c.

Aymar (ī'mā-rāz), an Indian race of Bolivia and Peru, speaking a language akin to the Quichua.

Ay'mon, the surname of four brothers, Alard, Richard, Guiscard, and Renaud, who hold a first place among the heroes of the Charlemagne cycle of romance. Their exploits were the subject of a romance, *Les Quatre Fils d'Aymon*, by Huon de Villeneuve, a trouvère of the thirteenth century, and Renaud is a leading figure in Ariosto's *Orlando*.

Ayr (ār), a town of Scotland, a royal and

parl. burgh, and capital of Ayrshire, at the mouth of the river Ayr, near the Firth of Clyde. It was the site of a Roman station. William the Lion built a castle here in 1197 and constituted it a royal burgh in 1202; and the parliament which confirmed Robert Bruce's title to the crown sat in Ayr. It is picturesquely situated, and ranks among the better class of provincial towns. Two bridges connect Ayr proper with the suburbs of Newton and Wallacetown. One of the bridges, opened in 1879, occupies the place of the 'New Brig' of Burns's *Brigs of Ayr*, the 'Auld Brig' (built 1252) being still serviceable for foot traffic. Carpets and lace curtains are manufactured. The harbour accommodation is good, and there is a considerable shipping trade, especially in coals. The house in which Burns was born stands within 1½ miles of the town, between it and the church of Alloway ('Alloway's auld haunted kirk'), and a monument to him stands on a height between the kirk and the bridge over the Doon. Pop. 23,835.—The county has a length along the Firth of Clyde and North Channel of 80 miles; area, 735,262 acres. It is divided into the districts of Carrick in the south, Kyle in the middle, and Cunningham in the north. The surface is irregular, and a large portion of it hilly, but much of it is fertile. The principal streams are the Ayr, Stinchar, Girvan, Doon, Irvine, and Garnock. Coal and iron are abundant; and there are numerous collieries and ironworks. Limestone and freestone abound. Agriculture is in an advanced state, the principal crops being oats, turnips, and potatoes, while dairy husbandry is extensively practised; the Ayrshire cows are celebrated as milkers, and the Dunlop cheese has a good reputation. Woollen manufactures are extensive, particularly carpets, bonnets, and worsted shawls, produced in great quantities at Kilmarnock and other places, and Ayrshire needlework and wooden snuff-boxes and similar articles are also much esteemed. Chief towns, Ayr, Kilmarnock, and Irvine. North Ayrshire and South Ayrshire each returns one member to parliament. Pop. 1891, 224,222.

Ayrer (ī'rer), JACOB, a German dramatist of the sixteenth century, who almost rivalled Hans Sachs in copiousness and importance. He was a citizen and legal official of Nuremberg, and died in 1605. His works, published at Nuremberg in 1618, under the title *Opus Theatricum*, include thirty come-

fies and tragedies and thirty-six humorous pieces.

Aytoun (ā'tun), SIR ROBERT, poet, born in Fifeshire, Scotland, 1570, died 1638. After studying at St. Andrews he lived for some time in France, whence, in 1603, he addressed a panegyric in Latin verse to King James on his accession to the crown of England. By the grateful monarch he was appointed one of the gentlemen of the bed-chamber, and private secretary to the queen, receiving also the honour of knighthood. At a later period of his life he was secretary to Henrietta Maria, queen of Charles I. His poems are few in number, but are distinguished by elegance of diction. Several of his Latin poems are preserved in the work called *Deliciæ Poetarum Scotorum*.

Aytoun, WILLIAM EDMONDSTOUNE, poet and prose writer, born at Edinburgh in 1813; died at Blackhills, Elgin, 1865. He studied at the University of Edinburgh, became a writer to the signet in 1835, and passed as advocate in 1840. He issued a volume of poems in 1832, by 1836 was a contributor to Blackwood's Magazine, and he published the *Life and Times of Richard I.* in 1840. In 1848 he published a collection of ballads entitled *Lays of the Scottish Cavaliers*, which has proved the most popular of all his works. It was followed in 1854 by *Firmilian*, a Spasmodic Tragedy (intended to ridicule certain popular writers); the *Bon Gaultier Ballads* (parodies and other humorous pieces, in conjunction with Theodore Martin), 1855; in 1856 the poem *Bothwell*; and in subsequent years by *Norman Sinclair*, *The Glenmutchkin Railway*, and other stories. In 1858 he edited a critical and annotated collection of the *Ballads of Scotland*. A translation of the poems and ballads of Goethe was executed by him in conjunction with Theodore Martin. In 1845 he became professor of rhetoric and English literature in the University of Edinburgh—a position which he held till his death. In 1852 he was appointed Sheriff of Orkney and Shetland.

Ayuntamiento (ā-yun-tā-mē-en'tō), the name given to the town and village councils in Spain and Spanish America.

Ayu'thia, the ancient capital of Siam, on the Menam, now a scene of splendid ruin.

Aza'lea, a genus of plants, nat. order Ericaceæ, or heaths, remarkable for the beauty and fragrance of their flowers, and distinguished from the rhododendrons chiefly by the flowers having five stamens instead

of ten. Many beautiful rhododendrons with deciduous leaves are known under the name of *azalea* in gardens. The azaleas are common in North America, and two species of



Azalea (*Azalea indica*).

these—*A. viscōsa* and *A. nudiflōra*—are well known in Britain. An Asiatic species, *A. pontica*, famous for the stupefying effect which its honey is said to have produced on Xenophon's army, is also common in British gardens and shrubberies; and another, *A. indica*, is a brilliant greenhouse plant.

Azamgarh, a town of India, N.W. Provinces, capital of dist. of same name. Pop. 18,528.—The district has an area of 2147 sq. miles; a pop. of 1,604,654.

Azeglio (ād-zel'yō), MASSIMO TAPARELLI, MARQUIS D', an Italian 'admirable Crichton,' artist, novelist, publicist, statesman, and soldier, born at Turin in 1798, died 1866. After gaining some reputation in Rome as a painter, he married the daughter of Manzoni, and achieved success in literature by his novels *Ettore Fieramosco* (1833) and *Niccolo di Lapi* (1841). These embodied much of the patriotic spirit, and in a short time he devoted himself exclusively to fostering the national sentiment by personal action and by his writings. Many of the reforms of Pius IX. were due to him. He commanded a legion in the Italian struggle of 1848, and was severely wounded at Vincenza. Chosen a member of the Sardinian Chamber of Deputies, he was, after the battle of Novara, made president of the cabinet, and in 1859 appointed to the military post of general and commissioner-extraordinary for the Roman States.

Azerbaijan (ā-zer-bī-jān'), a province of North-western Persia; area, 40,000 sq. miles; pop. estimated at 2,000,000. It consists generally of lofty mountain ranges, some

of which rise to a height of between 12,000 and 13,000 feet. Principal rivers: the Aras or Araxes, and the Kizil-Uzen, which enter the Caspian; smaller streams discharge themselves within the province into the great salt lake of Urumiyah. Agricultural products: wheat, barley, maize, fruit, cotton, tobacco, and grapes. Horses, cattle, sheep, and camels are reared in considerable numbers. Chief minerals: iron, lead, copper, salt, saltpetre, and marble. Tabreez is the capital.

Azimgurh. See *Azamgarh*.

Az'imuth of a heavenly body, the arc of the horizon comprehended between the meridian of the observer and a vertical circle passing through the centre of the body. The azimuth and altitude give the exact position of the body.

Azincourt. Same as *Agincourt*.

A'zof, or AZOPH, a town in the Russian government of Ekaterinoslav, upon an island at the mouth of the Don, where it flows into the Sea of Azof; formerly a place of extensive trade, but its harbour has become almost sanded up. Pop. 16,791.

Azof, SEA OF (anc. *Palus Mæotis*), an arm of the Black Sea, with which it is united by the Straits of Kertch or Kaffa; length about 170, breadth about 80 miles; greatest depth not more than 8 fathoms. The w. part, called the Putrid Sea, is separated from the main expanse by a long sandy belt called Arabat, along which runs a military road. The sea teems with fish. The Don and other rivers enter it, and its waters are very fresh.

Azo'ic, 'without life,' a term applied to rocks devoid of fossils.

Azores (a-zōrz' or a-zō'res), or WESTERN ISLANDS, a group belonging to and 900 miles west of Portugal, in the North Atlantic Ocean. They are nine in number, and form three distinct groups—a N.W., consisting of Flores and Corvo; a central, consisting of Terceira, São Jorge, Pico, Fayal, and Graciosa; and a S.E., consisting of São Miguel (or St. Michael) and Santa Maria. The total area is about 900 sq. miles; São Miguel (containing the capital Ponta Delgada), Pico and Terceira are the largest. The islands, which are volcanic and subject to earthquakes, are apparently of comparatively recent origin, and are conical, lofty, precipitous, and picturesque. The most remarkable summit is the peak of Pico, about 7600 feet high. There are numerous hot springs. They are covered with luxuriant vegetation, and

diversified with woods, corn-fields, vineyards, lemon and orange groves, and rich open pastures. The mild and somewhat humid climate, combined with the natural fertility of the soil, brings all kinds of vegetable products rapidly to perfection, among the most important being grain, oranges, pine-apples, bananas, potatoes, yams, beans, coffee, and tobacco. The inhabitants are mainly of Portuguese descent, indolent and devoid of enterprise. Principal exports: wine and brandy, oranges, maize, beans, pine-apples, cattle. The climate is recommended as suitable for consumptive patients. The Azores were discovered by Cabral about 1481, shortly after which date they were taken possession of and colonized by the Portuguese. When first visited they were uninhabited, and had scarcely any other animals except birds, particularly hawks, to which, called in Portuguese *açores*, the islands owe their name. Pop. 270,000.

Az'ote, a name formerly given to nitrogen; hence substances containing nitrogen and forming part of the structure of plants and animals are known as *azotized* bodies. Such are albumen, fibrine, caseine, gelatine, urea, kreatine, &c.

Azov. See *Azof*.

Azpeitia (âth-pā'i-ti-à), a town of N.E. Spain, prov. Guipuzcoa. Near it is the convent of Loyola, a large edifice, now a museum. Pop. 6386.

Az'rael, in Mohammedan mythology, the angel of death.

Az'tecs, a race of people who settled in Mexico early in the fourteenth century, ultimately extended their dominion over a large territory, and were still extending their supremacy at the time of the arrival of the Spaniards, by whom they were speedily subjugated. Their political organization, termed by the Spanish writers an absolute monarchy, appears to have consisted of a military chief exercising important, but not unlimited power in civil affairs, in which the council of chiefs and periodic assemblies of the judges had also a voice. Their most celebrated ruler was Montezuma, who was reigning when the Spaniards arrived, about the middle of the fifteenth century. It is inferred that considerable numbers of them lived in large communal residences, and that land was held and cultivated upon the communal principle. Slavery and polygamy were both legitimate, but the children of slaves were regarded as free. Although ignorant of the horse, ox, &c., they

had a considerable knowledge of agriculture, maize and the agave being the chief produce. Silver, lead, tin, and copper were obtained from mines, and gold from the surface and river beds, but iron was unknown to them, their tools being of bronze and obsidian. In metal-work, feather-work, weaving, and pottery, they possessed a high degree of skill. To record events they used an unsolved hieroglyphic writing, and their lunar calendars were of unusual accuracy. Two special deities claimed their reverence: Hintzilopochtli, the god of war, propitiated with human sacrifices; and Quetzalcoatl, the beneficent god of light and air, with whom at first the Aztecs were disposed to identify Cortez. Their temples, with large terraced pyramidal bases, were in the charge of an exceedingly large priesthood, with whom lay the education of the young. As a civi-

lization of apparently independent origin, yet closely resembling in many features the archaic oriental civilizations, the Aztec civilization is of the first interest, but in most accounts of it a large speculative element has to be discounted.

Az'uline, **Az'URINE**, blue dyes belonging to the coal-tar class.

A'zure, the heraldic term for the colour blue, represented in engraving by horizontal lines.

Az'urine (*Leuciscus carulëus*), a fresh-water fish of the same genus as the roach, chub, and minnow, found in some parts of Europe, but rare in Britain; called also *Blue Roach*.

Az'urite, a blue mineral, a carbonate of copper, occurring in crystals which are rather brittle; called also *Blue Malachite*. Also a name of lazulite.

B.

B is the second letter and the first consonant in the English and most other alphabets. It is a mute and labial, pronounced solely by the lips, and is distinguished from *p* by being sonant, that is, produced by the utterance of voice as distinguished from breath.

B, in *music*, the seventh note of the model diatonic scale or scale of C. It is called the leading note, as there is always a feeling of suspense when it is sounded until the key-note is heard.

Baader, **FRANZ XAVER VON** (fränts-zä'fer fon bä'der), German philosopher, and the greatest speculative Roman Catholic theologian of modern times; born in Munich, 1765, died 1841. He studied engineering, became superintendent of mines, and was ennobled for his services. He was deeply interested in the religious speculations of Eckhart, St. Martin, and Böhme, and in 1826 was appointed professor of philosophy and speculative theology in the University of Munich. During the last three years of his life he was interdicted from lecturing for opposing the interference in civil matters of the Roman Catholic Church.

Ba'al, **BEL**, a Hebrew and general Semitic word, which originally appears to have been generic, signifying simply lord, and to have been applied to many different divinities, or, with qualifying epithets, to the same divinity regarded in different aspects and as

exercising different functions. Thus in *Hos.* ii. 16 it is applied to Jehovah himself, while *Baal-berith* (the Covenant-lord) was the god of the Shechemites, and *Baal-zebub* (the Fly-god) the idol of the Philistines at Ekron. Baal was the sacred title applied to the Sun as the principal male deity of the Phœnicians and their descendants the Carthaginians, as well as of the ancient Canaanitish nations, and was worshipped as the supreme ruler and vivifier of nature. The word enters into the composition of many Hebrew, Phœnician, and Carthaginian names of persons and places; thus, *Jerubaal*, *Hasdrubal* (help of Baal), *Hannibal* (grace of Baal), and *Baal-Hammon*, *Baal-Thamar*, &c.

Baalbek' (anc. *Heliopölis*, city of the sun), a place in Syria, in a fertile valley at the foot of Antilibanus, 40 miles from Damascus, famous for its magnificent ruins. Of these the chief is the temple of the Sun, built either by Antoninus Pius or by Septimius Severus. Some of the blocks used in its construction are 60 ft. long by 12 thick; and its 54 columns, of which 6 are still standing, were 72 ft. high and 22 in circumference. Near it is a temple of Jupiter, of smaller size though still larger than the Parthenon at Athens, and there are other structures of an elaborately ornate type. Originally a centre of the Sun-worship, it became a Roman colony under Julius Cæsar,

was garrisoned by Augustus, and acquired increasing renown under Trajan as the seat of an oracle. Under Constantine its temples became churches, but after being sacked by the Arabs in 748, and more completely pillaged by Tamerlane in 1401, it sank into hopeless decay. The work of destruction was completed by an earthquake in 1759.

Baal-zebub. See *Beelzebub*.

Baba, a cape near the north-west point of Asia Minor.

Babadagh (bâ-bâ-dâg'), a town of Roumania, capital of the Dobrudsha, carrying on a considerable Black Sea trade. Pop. 10,000.

Babbage, CHARLES, the eminent English mathematician and inventor of the calculating machine; born 1792, died 1871. He graduated at Cambridge in 1814, and occupied the Lucasian chair of mathematics at Cambridge for eleven years, but delivered no lectures. As early as 1812 he conceived the idea of calculating numerical tables by machinery, and in 1823 he received a grant from government for the construction of such a machine. After a series of experiments lasting eight years, and an expenditure of £17,000 (£6000 of which was sunk by himself, the balance voted by government), Babbage abandoned the undertaking in favour of a much more enlarged work, an analytical engine, worked with cards like the jacquard-loom; but the project was never completed. The incompleting machine is now in the South Kensington Museum. Among the many treatises he published on subjects connected with mathematics and mechanics few can be regarded as finished performances.

Babbitt-metal, a soft metal resulting from alloying together certain proportions of copper, tin, and zinc or antimony, used with the view of as far as possible obviating friction in the bearings of journals, cranks, axles, &c., invented by Isaac Babbitt (1799–1862), a goldsmith of Taunton, Massachusetts.

Babel, the same as *Babylon*.

Babel, TOWER OF, according to the 11th chapter of Genesis, a structure in the Plain of Shinar, Mesopotamia, commenced by the descendants of Noah subsequent to the deluge, but which was not allowed to proceed to completion. It has commonly been identified with the great temple of Belus or Bel that was one of the chief edifices in Babylon, and the huge mound called Birs Nimrud is generally regarded as its site,

though another mound, which to this day bears the name of Babil, has been assigned by some as its site. Babel means literally 'gate of God.' The meaning 'confusion' assigned to it in the Bible really belongs to a word of similar form. See *Babylon*.

Bab-el-Mandeb ('gate of tears,' from being dangerous to small craft), a strait, 15 miles wide, between the Indian Ocean and the Red Sea, formed by projecting points of Arabia in Asia, and Abyssinia in Africa. The island of Perim is here.

Bab'ber, first Grand Mogul, the founder of the Mogul dynasty in Hindustan, born in 1483, died 1530. He was a grandson of the great Tartar prince Timur or Tamerlane, and was sovereign of Cabul. He several times invaded Hindustan, and in 1525 finally overthrew and killed Sultan Ibrahim, the last Hindu emperor of the Patan or Afghan race. He made many improvements, social and political, in his empire, and left a valuable autobiography.

Babeuf (bâ-beuf), FRANÇOIS NOEL, a personage connected with the French revolution, born in 1764. He started a democratic journal at Paris, called *Le Tribun du Peuple*, par Gracchus Babeuf, and wrote with great severity against the Jacobins. After the fall of Robespierre, to which he powerfully contributed, he openly attacked the terrorists, and advocated the most democratic principles. He was accused of a conspiracy against the directorial government, condemned to death, and guillotined in 1797.

Bab'ington, ANTHONY, a Catholic gentleman of Derbyshire, who associated with others of his own persuasion to assassinate Queen Elizabeth, and deliver Mary, queen of Scots. The plot being discovered the conspirators were executed in 1586.

Babiroussa. See *Babyroussa*.

Bab'ism, the doctrines of a Mohammedan sect whose head-quarters is Persia, founded by Seyd Mohammed Ali about 1843. He took the name of Bab-ed-din, 'the gate of the faith,' and afterwards that of Nokteh, 'the point,' as not merely the recipient of a new divine revelation, but the focus in which all preceding dispensations would converge. One of his most successful disciples was a highly-gifted woman, Gurreddul-Ayn, 'consolation of the eyes,' who perished with many others during a persecution in 1852. The Bab himself had been executed about two years before this, and was succeeded by a noble youth, Mirza

Yahya. The sect holds that all individual existence is an emanation from the supreme deity, by whom it will be ultimately re-absorbed. The morality of the sect is pure and cheerful, and it shows great advancement in the treatment of woman. Moses, Christ, and Mohammed are acknowledged as prophets, though only mere precursors of the Bab.

Ba'boo, or **BABU**, a Hindu title of respect equivalent to *sir* or *master*, usually given to wealthy and educated native gentlemen, especially when of the mercantile class.

Baboon', a common name applied to a division of old-world quadrumana (apes and monkeys), comprehending the genera *Cynocephalus* and *Papio*. They have elon-



Baboon (*Cynocephalus babouin*).

gated abrupt muzzles like a dog, strong tusks or canine teeth, usually short tails, cheek-pouches, small deep eyes with large eyebrows, and naked callosities on the buttocks. Their hind and fore feet are well proportioned, so that they run easily on all fours, but they do not maintain themselves in an upright posture with facility. They are generally of the size of a moderately large dog, but the largest, the mandrill, is, when erect, nearly of the height of a man. They are almost all African, ugly, sullen, fierce, lascivious, and gregarious, defending themselves by throwing stones, dirt, &c. They live on fruits and roots, eggs and insects. They include the chacma, drill, common baboon, and mandrill. The chacma or pig-tailed baboon (*Cynocephalus porca-rius*) is found in considerable numbers in

parts of the S. African colonies, where the inhabitants wage war against them on account of the ravages they commit in the fields and gardens. The common baboon (*C. babouin*) inhabits a large part of Africa farther to the north. It is of a brownish-yellow colour, while the chacma is grayish black, or in parts black. The hamadryas (*C. hamadryas*) of Abyssinia is characterized by long hair, forming a sort of shoulder cape. The black baboon (*C. niger*) is found in Celebes.

Babour (bä'būr). Same as *Baber*.

Bab'rius, a Greek poet who flourished during the second or third century of the Christian era, and wrote a number of Æsopian fables. Several versions of these made during the middle ages have come down to us as Æsop's fables. In 1840 a manuscript containing 120 fables by Babrius, previously unknown, was discovered on Mount Athos.

Babuya'nes Islands, a group in the Pacific Ocean, between Luzon and Formosa, belonging to Spain. Pop. about 8000.

Bab'ylon, the capital of Babylonia, on both sides of the Euphrates, one of the largest and most splendid cities of the ancient world, now a scene of ruins, and earth-mounds containing them. Babylon was a royal city sixteen hundred years before the Christian era; but the old city was almost entirely destroyed in 683 B.C. A new city was built by Nebuchadnezzar nearly a century later. This was in the form of a square, each side 15 miles long, with walls of such immense height and thickness as to constitute one of the wonders of the world. It contained splendid edifices, large gardens and pleasure-grounds, especially the 'hanging-gardens,' a sort of lofty terraced structure supporting earth enough for trees to grow, and the celebrated tower of Babel or temple of Belus, rising by stages to the height of 625 ft. (See *Babel, Tower of*.) After the city was taken by Cyrus in 538 B.C., and Babylonia made a Persian province, it began to decline, and had suffered severely by the time of Alexander the Great. He intended to restore it, but was prevented by his death, which took place here in 323 B.C., from which time its decay was rapid. Interesting discoveries have been made on its site in recent times, more especially of numerous and valuable inscriptions in the cuneiform or arrow-head character. The modern town of Hillah is believed to represent the ancient city, and the plain here for miles

BABYLONIA — BABYLONISH CAPTIVITY.

round is studded with vast mounds of earth and brick and imposing ruins. The greatest mound is Birs Nimrud, about 6 miles from Hillah. It rises nearly 200 ft., is crowned by a ruined tower, and is commonly believed to be the remains of the ancient temple of Belus. Another great ruin-mound, called Mujelibeh, has also been assigned as its site.

Babylonia (now *Irak Arabi*), an old Asiatic empire occupying the region watered by the lower course of the Euphrates and the Tigris, and by their combined stream. The inhabitants, though usually designated Babylonians, were sometimes called Chaldeans, and it is thought that the latter name represents a superior caste who at a comparatively late period gained influence in the country. At the earliest period of which we have record the whole valley of the Tigris and Euphrates was inhabited by tribes of Turanian or Tatar origin. Along with these, however, there early existed an intrusive Semitic element, which gradually increased in number till at the time the Babylonians and Assyrians (the latter being a kindred people) became known to the western historians they were essentially Semitic peoples. The great city Babylon (which see), or Babel, was the capital of Babylonia, which was called by the Hebrews Shinar. The country was, as it still is, exceedingly fertile, and must have anciently supported a dense population. The chief cities, besides Babylon, were Ur, Calneh, Erech, and Sippara. Babylonia and Assyria were often spoken of together as Assyria.

The discovery and interpretation of the cuneiform inscriptions have enabled the history of Babylonia to be carried back to about 4000 B.C., at which period the inhabitants had attained a considerable degree of civilization, and the country was ruled by a number of kings or princes each in his own city. About 2700 B.C. Babylonia came under the rule of a single monarch. Latterly it had serious wars with neighbouring nations, and for several hundred years previous to 2000 B.C. Babylonia was subject to the neighbouring Elam. It then regained its independence, and for a thousand years it was the foremost state of Western Asia in power, as well as in science, art, and civilization. The rise of the Assyrian empire brought about the decline of Babylonia, which latterly was under Assyrian domination, though with

intervals of independence. Tiglath-Pileser II. of Assyria (745–727) made himself master of Babylonia; but the conquest of the country had to be repeated by his successor, Sargon, who expelled the Babylonian king, Merodach-Baladan, and all but finally subdued the country, the complete subjugation being effected by Sennacherib. After some sixty years the second or later Babylonian empire arose under Nabopolassar, who, joining the Medes against the Assyrians, freed Babylon from the superiority of the latter power, 625 B.C. The new empire was at its height of power and glory under Nabopolassar's son, Nebuchadnezzar (604–561), who subjected Jerusalem, Tyre, Phœnicia, and even Egypt, and carried his dominion to the shores of the Mediterranean and northwards to the Armenian mountains. The capital, Babylon, was rebuilt by him, and then formed one of the greatest and most magnificent cities the world has ever seen. He was succeeded by his son Evil-Merodach, but the dynasty soon came to an end, the last king being Nabonetus or Nabonadius, who came to the throne in B.C. 555, and made his son, Belshazzar, co-ruler with him. Babylon was taken by Cyrus the Persian monarch in 538, and the second Babylonian empire came to an end, Babylonia being incorporated in the Persian empire. Its subsequent history was similar to that of Assyria.

The account of the civilization, arts, and social advancement of the Assyrians already given in the article *Assyria* may be taken as generally applying also to the Babylonians, though certain differences existed between the two peoples. In Babylonia stone was not to be had, and consequently brick was the almost universal building material. Sculpture was thus less developed in Babylonia than in Assyria, and painting more. Babylonian art had also more of a religious character than that of Assyria, and the chief edifices found in ruins are temples. Weaving and pottery were carried to high perfection. Astronomy was cultivated from the earliest times. The Babylonians had a number of deities, but latterly the chief or national deity was Bel Merodach, originally the Sun-god. Education was well attended to, and there were schools and libraries in connection with the temples.

Babylon, Long Island, N. Y., a favorite summer resort; 4 hotels, 4 mills; 37 miles east of L. I. City.

Babylonish Captivity, a term usually

applied to the deportation of the two tribes of the kingdom of Judah to Babylon by Nebuchadnezzar, 585 B.C. The duration of this captivity is usually reckoned seventy years, though strictly speaking it lasted only fifty-six years. A great part of the ten tribes of Israel had been previously taken captive to Assyria.

Babyroussa (bab-i-rus'a; a Malay word signifying stag-hog), a species of wild hog (*Sus* or *Porcus Babyrussa*), a native of the Indian Archipelago. From the outside of the



Babyroussa (*Sus Babyrussa*)

upper jaw spring two teeth 12 inches long, curving upwards and backwards like horns, and almost touching the forehead. The tusks of the lower jaw also appear externally, though they are not so long as those of the upper jaw. Along the back are some weak bristles, and on the rest of the body only a sort of wool. These animals live in herds, feed on herbage, are sometimes tamed, and their flesh is well flavoured.

Bac'carat, a gambling game of French origin, played by any number of players, or rather bettors, and a banker. The latter deals two cards to each player and two to himself, and covers the stakes of each with an equal sum. The cards are then examined, and according to the scores made the players take their own stake and the banker's, or the latter takes all or a certain number of the stakes.

Bacchana'lia, or **DIONYSIA**, feasts in honour of Bacchus or Dionysos, characterized by licentiousness and revelry, and celebrated in ancient Athens. In the processions were bands of Bacchantes of both sexes, who, inspired by real or feigned intoxication, wandered about rioting and dancing. They were clothed in fawn-skins, crowned with ivy, and bore in their hands *thyrsi*, that is spears en-

twined with ivy, or having a pine-cone stuck on the point. These feasts passed from the Greeks to the Romans, who celebrated them with still greater dissoluteness till the senate abolished them B.C. 187.

Bacchante (bak-an'te), a person taking part in revels in honour of Bacchus. See *Bacchanalia*.

Bacchiglione (bàk-kil'yō-nā), a river of Northern Italy, rises in the Alps, passes through the towns of Vicenza and Padua, and enters the Adriatic near Chioggia, after a course of about 90 miles.

Bacchus (bak'us; in Greek, generally *Dionysos*), the god of wine, son of Zeus (Jupiter) and Sēmēlē. He first taught the cultivation of the vine and the preparation of wine. To spread the knowledge of his invention he travelled over various countries and received in every quarter divine honours. Drawn by lions (some say panthers, tigers, or lynxes), he began his march, which resembled a triumphal procession. Those who opposed him were severely punished, but on those who received him hospitably he bestowed rewards. His love was shared by several; but Ariadne, whom he found deserted upon Naxos, alone was elevated to the dignity of a wife, and became a sharer of his immortality. In art he is represented with the round, soft, and graceful form of a maiden rather than with that of a young man. His long waving hair is knitted behind in a knot, and wreathed with sprigs of ivy and vine leaves. He is usually naked; sometimes he has an ample mantle hung negligently round his shoulders; sometimes a fawn-skin hangs across his breast. He is often accompanied by Silenus, Bacchantes, Satyrs, &c. See *Bacchanalia*.

Bacchylides (bak-kil'i-dēz), born in the island of Cos, about the middle of the fifth century B.C., the last of the great lyric poets of Greece, a nephew of Simonides and a contemporary of Pindar. Of his odes, hymns, pæans, triumphal songs, only a few fragments remain.

Bacciocchi (bât-chok'ē), MARIA ANNE ELIZA BONAPARTE, sister of Napoleon, born at Ajaccio 1777, died near Trieste 1820; a great patroness of literature and art. She married Captain Bacciocchi, who in 1805 was created Prince of Lucca and Piombino. She virtually ruled these principalities herself, and as Grand-duchess of Tuscany she enacted the part of a queen. She fell with the empire.

Baccio Della Porta (bàch'ō), Italian

painter, better known under the name of *Fra Bartolommeo*, born at Florence 1469, died there 1517. He studied painting in Florence, and acquired a more perfect knowledge of art from the works of Leonardo da Vinci. He was an admirer and follower of Savonarola, on whose death he took the Dominican habit, and assumed the name of *Fra Bartolommeo*. He was the friend of Michael Angelo and Raphael; painted many religious pictures, among them a Saint Mark and Saint Sebastian, which are greatly admired. His colouring, in vigour and brilliancy, comes near to that of Titian and Giorgione.

Bach (bâh), JOHANN SEBASTIAN, one of the greatest of German musicians, was born in 1685, at Eisenach; died in 1750, at Leipzig. Being the son of a musician he



Johann Sebastian Bach.

was early trained in the art, and soon distinguished himself. In 1703 he was engaged as a player at the court of Weimar, and subsequently he was musical director to the Duke of Anhalt-Köthen, and latterly held an appointment at Leipzig. He paid a visit to Potsdam on the invitation of Frederick the Great. As a player on the harpsichord and organ he had no equal among his contemporaries; but it was not till a century after his death that his greatness as a composer was fully recognized. His compositions breathe an original inspiration, and are largely of the religious kind. They include pieces, vocal and instrumental, for the organ, piano, stringed and keyed instruments; church cantatas, oratorios, masses, passion music, &c. More

than fifty musical performers have proceeded from this family. Sebastian himself had eleven sons, all distinguished as musicians. The most renowned were the following:—WILHELM FRIEDEMANN, born in 1710 at Weimar; died at Berlin in 1784. He was one of the most scientific harmonists and most skilful organists.—KARL PHILIPP EMMANUEL, born in 1714 at Weimar; died in 1788 at Hamburg. He composed mostly for the piano, and published melodies for Gellert's hymns; wrote on the True Manner of Playing the Harpsichord.—JOHANN CHRISTOPH FRIEDRICH, born at Weimar, 1732; died in 1795; a great organist, is known also by the music he published.—JOHANN CHRISTIAN, born in 1735 at Leipzig; died in London 1782; was a favourite composer and conductor with the English public.

Bacharach (bâh'â-râh), a small place of 1900 inhabitants on the Rhine, 12 miles s. of Coblenz. The vicinity produces excellent wine, which was once highly esteemed. The view from the ruins of the castle is one of the sublimest on the Rhine.

Bach'elor, a term applied anciently to a person in the first or probationary stage of knighthood who has not yet raised his standard in the field. It also denotes a person who has taken the first degree in the liberal arts and sciences, or in divinity, law, or medicine, at a college or university; or a man of any age who has not been married.—A *knight bachelor* is one who has been raised to the dignity of a knight without being made a member of any of the orders of chivalry such as the Garter or the Thistle.

Bachelor's Buttons, the double-flowering buttercup (*Ranunculus acris*), with white or yellow blossoms, common in gardens.

Bachian (bâch'ân), one of the Molucca Islands, immediately s. of the equator, s.w. of Gilolo; area, 800 sq. miles. It is ruled by a native sultan under the Dutch.

Bachmut (bâh-möt'), a town of Southern Russia, gov. of Ekaterinoslav, with a trade in cattle, tallow, &c., and coal and rock-salt mines. Pop. 17,674.

Bacilla'ria, a genus of microscopic algæ belonging to the class Diatomaceæ, the siliceous remains of which abound in cretaceous, tertiary, and more recent geological deposits.

Bacil'lus, the name applied to certain minute rod-like microscopic organisms (Bacteria) which often appear in putrefactions,

and one of which is believed to hold a constant causative relation to tubercle in the lung, and to be present in all cases of phthisis. Others are alleged to be connected with



Bacillus of ordinary Putrefaction, highly magnified.

A. 1, single bacilli; 2, bacilli forming threads and developing spores. The bright oval body in the centre of each bacillus is a spore. B. 1, ordinary form without spores; 2, with spores; 3, free spores; 4, a mass of spores. (After Klein.)

anthrax, typhoid fever, erysipelas, &c. See *Bacteria*.

Back, ADMIRAL SIR GEORGE, eminent English Arctic discoverer, born 1796, died 1878. He accompanied Franklin and Richardson in their northern expeditions, and in 1833-34 headed an expedition to the Arctic Ocean through the Hudson Bay Company's territory, on which occasion he wintered at the Great Slave Lake, and discovered the Back or Great Fish River.

Backergunge. See *Bakarganj*.

Backgam'mon, a game played by two persons upon a table or board made for the purpose, with pieces or men, dice-boxes, and dice. The table is in two parts, on which are twenty-four black and white spaces called points. Each player has fifteen men of different colours for the purpose of distinction. The movements of the men are made in accordance with the numbers turned up by the dice.

Backhuysen (bák'hoi-zn), LUDOLF, a celebrated painter of the Dutch school, particularly in sea pieces, born in 1631, died 1709. His most famous picture is a sea piece which the burgomasters of Amsterdam commissioned him to paint as a present to Louis XVI. It is still at Paris.

Backwarda'tion, a stock exchange term signifying the rate paid by a speculative seller of stock for the privilege of carrying over or continuing a bargain from one fortnightly account to another, instead of closing it on the appointed day.

Bacninh, a town of Tonquin, on the Red River, fortified and containing a French garrison, being in an important strategic position. Pop. 7000.

Ba'con, ANTHONY, elder brother to the celebrated lord-chancellor, was born in 1558

and died in 1601. He was a skilful politician, and much devoted to learned pursuits. He became personally acquainted with most of the foreign literati of the day, and gained the friendship of Henry IV. of France. Lord Bacon dedicated to him the first edition of the *Essays*.

Bacon, FRANCIS, Baron of Verulam, Viscount St. Albans, and Lord High Chancellor of England; was born at London in 1561, died at Highgate in 1626. His father, Nicholas Bacon, was keeper of the great seal under Queen Elizabeth. (See *Bacon, Nicholas*.) He was educated at Trinity College, Cambridge, and in 1575 was admitted to Gray's Inn. In 1576-79 he was at Paris with Sir Amyas Paulet, the English ambassador. The death of his father called him back to England, and being left in straitened circumstances he zealously pursued the study of law, and was admitted



Lord Bacon.

a barrister in 1582. In 1584 he became member of parliament for Melcombe Regis, and soon after drew up a Letter of Advice to Queen Elizabeth, an able political memoir. In 1586 he was member for Taunton, in 1589 for Liverpool. A year or two after he gained the Earl of Essex as a friend and patron. Bacon's talents and his connection with the lord-treasurer Burleigh, who had married his mother's sister, and his son Sir Robert Cecil, first secretary of state, seemed to promise him the highest promotion; but he had displeased the queen, and when he applied for the attorney-generalship, and next for the solicitor-generalship (1595), he was unsuccessful. Essex endeavoured to indemnify

him by the donation of an estate in land. Bacon, however, forgot his obligations to his benefactor, and not only abandoned him as soon as he had fallen into disgrace, but without being obliged took part against him on his trial, in 1601, and was active in obtaining his conviction. He had been chosen member for the county of Middlesex in 1593, and for Southampton in 1597, and had long been a queen's counsel. The reign of James I. was more favourable to his interest. He was assiduous in courting the king's favour, and James, who was ambitious of being considered a patron of letters, conferred upon him in 1603 the order of knighthood. In 1604 he was appointed king's counsel, with a pension of £60; in 1606 he married; in 1607 he became solicitor-general, and six years after attorney-general. Between James and his parliament he was anxious to produce harmony, but his efforts were without avail, and his obsequiousness and servility gained him enmity and discredit. In 1617 he was made lord-keeper of the seals; in 1618 Lord High Chancellor of England and Baron Verulam. In this year he lent his influence to bring a verdict of guilty against Raleigh. In 1621 he was made Viscount St. Albans. Soon after this his reputation received a fatal blow. A new parliament was formed in 1621, and the lord-chancellor was accused before the house of bribery, corruption, and other malpractices. It is difficult to ascertain the full extent of his guilt; but he seems to have been unable to justify himself, and handed in a 'confession and humble submission,' throwing himself on the mercy of the Peers. He was condemned to pay a fine of £40,000, to be committed to the Tower during the pleasure of the king, declared incompetent to hold any office of state, and banished from court for ever. The sentence, however, was never carried out. The fine was remitted almost as soon as imposed, and he was imprisoned for only a few days. He survived his fall a few years, during this time occupying himself with his literary and scientific works, and vainly hoping for political employment. In 1597 he published his celebrated *Essays*, which immediately became very popular, were successively enlarged and extended, and translated into Latin, French, and Italian. The treatise on the *Advancement of Learning* appeared in 1605; *The Wisdom of the Ancients* in 1609 (in Latin); his great philosophical work, the *Novum Organum*

(in Latin), in 1620; and the *De Augmentis Scientiarum*, a much enlarged edition (in Latin) of the *Advancement*, in 1623. His *New Atlantis* was written about 1614-17; *Life of Henry VII.* about 1621. Various minor productions also proceeded from his pen. Numerous editions of his works have been published, by far the best being that of Messrs. Spedding, Ellis, & Heath (1858-74). Bacon was great as a moralist, a historian, a writer on politics, and a rhetorician; but it is as the father of the inductive method in science, as the powerful exponent of the principle that facts must be observed and collected before theorizing, that he occupies the grand position he holds among the world's great ones. His moral character, however, was not on a level with his intellectual, self-aggrandizement being the main aim of his life. We need do no more than allude to the preposterous attempt that has been made to prove that Bacon was the real author of the plays attributed to Shakspeare, an attempt that only ignorance of Bacon and Shakspeare could uphold and tolerate.

Bacon, JOHN, English sculptor, born 1740, died 1799. Among his chief works are two groups for the interior of the Royal Academy; the statue of Judge Blackstone for All Souls College, Oxford; another of Henry VI. for Eton College; the monument of Lord Chatham in Westminster Abbey; and the statues of Dr. Johnson and Mr. Howard in St. Paul's Cathedral.

Bacon, SIR NICHOLAS, father of Lord Bacon, lord-keeper of the great seal, born 1510, died 1579. Henry VIII. gave him several lucrative offices, which he retained under Edward VI. He lived in retirement during the reign of Mary, but Queen Elizabeth appointed him lord-keeper for life. He was the intimate friend of Lord Burleigh, a sister of whose wife he married, and by her became the father of the great chancellor.

Bacon, ROGER, an English monk, and one of the most profound and original thinkers of his day, was born about 1214, near Ilchester, Somersetshire; died at Oxford in 1294. He first entered the University of Oxford, and went afterwards to that of Paris, where he is said to have distinguished himself and received the degree of Doctor of Theology. About 1250 he returned to England, entered the order of Franciscans, and fixed his abode at Oxford, but having incurred the suspicion of

his ecclesiastical superiors he was sent to Paris and kept in confinement for ten years, without writing materials, books, or instruments. The cause seems to have been simple enough. He had been a diligent student of the chemical, physical, and mathematical sciences, and had made discoveries, and deduced results, which appeared so extraordinary to the ignorant that they were believed to be works of magic. This opinion was countenanced by the jealousy and hatred of the monks of his fraternity. In subsequent times he was popularly classed among those who had been in league with Satan. Having been set at liberty he enjoyed a brief space of quiet while Clement IV. was pope; but in 1278 he was again thrown into prison, where he remained for at least ten years. Of the close of his life little is known. His most important work is his *Opus Majus*, where he discusses the relation of philosophy to religion, and then treats of language, metaphysics, optics, and experimental science. He was undoubtedly the earliest philosophical experimentalist in Britain; he made signal advances in optics; was an excellent chemist; and in all probability discovered gunpowder. He was intimately acquainted with geography and astronomy, as appears by his discovery of the errors of the calendar, and their causes, and by his proposals for correcting them, in which he approached very near to truth.

Bactéria (Gr. *baktērion*, a rod), a class of very minute microscopic organisms, often of a rod-like form, which are regarded as of vegetable nature, and as being the cause of putrefaction; they are also called *microbes* or *microphytes*. The genus *Bacterium*, in a restricted sense, comprises microscopic unicellular rod-shaped vegetable organisms, which multiply by transverse division of the cells. Species are found in all decomposing animal and vegetable liquids. The bacilli (see *Bacillus*) are often spoken of as bacteria, this latter term being used in a wide sense and comprising organisms of various forms and with several distinct names, as *spirillum*, *micrococcus*, &c. They consist of a mass of protoplasm inclosed in a membrane, and all have at some stage or other cilia serving for locomotion. Reproduction is asexual and by division. For their importance to man in regard to their connection with disease see *Germ Theory*.

Bactria'na, or **BACTRIA**, a country of ancient Asia, south of the Oxus and reaching to the west of the Hindu Kush. It is

often regarded as the original home of the Indo-European races. A Græco-Bactrian kingdom flourished about the third century B.C., but its history is obscure.

Baculites, a genus of fossil ammonites, characteristic of the chalk, having a straight tapering shell.

Ba'cup, a municipal borough of England, in Lancashire, 18 miles N. of Manchester. The chief manufacturing establishments are connected with cotton-spinning and power-loom weaving; there are also iron-works, Turkey-red dyeing works, and in the neighbourhood numerous coal-pits and immense stone quarries. Pop. 23,498.

Badagry, a British seaport on the Slave Coast, Upper Guinea, 50 miles E.N.E. of Whydah. Pop. about 10,000.

Badajoz (bâ-dâ-hôth'; anc. *Pax Augusta*), the fortified capital of the Spanish province of Badajoz, on the left bank of the Guadiana, which is crossed by a stone bridge of twenty-eight arches. It is a bishop's see, and has an interesting cathedral. During the Peninsular war Badajoz was besieged by Marshal Soult, and taken in March, 1811. It was twice attempted by the English, on 5th and 29th May, 1811, and was besieged by Wellington on 16th March, and taken 6th April, 1812. Pop. 22,860.

Badakshan', a territory of Central Asia, tributary to the Ameer of Afghanistan. It has the Oxus on the north, and the Hindu Kush on the south; and has lofty mountains and fertile valleys; the chief town is Faizabad. The inhabitants profess Mohammedanism. Pop. 100,000.

Badalona (bâ-dâ-lô'na), a Mediterranean seaport of Spain, 5 miles from Barcelona. Pop. 13,749.

Baden (bâ'dèn), **GRAND-DUCHY OF**, one of the more important states of the German Empire, situated in the S.W. of Germany, to the west of Würtemberg. It is divided into four districts, Constance, Freiburg, Karlsruhe, and Mannheim; has an area of 5824 sq. miles, and a pop. of 1,656,817. It is mountainous, being traversed to a considerable extent by the lofty plateau of the Schwarzwald or Black Forest, which attains its highest point in the Feldberg (4904 ft.). The nucleus of this plateau consists of gneiss and granite. In the north it sinks down towards the Odenwald, which is, however, of different geological structure, being composed for the most part of red sandstone. The whole of Baden, except a

small portion in the s.e., in which the Danube takes its rise, belongs to the basin of the Rhine, which bounds it on the south and west. Numerous tributaries of the Rhine intersect it, the chief being the Neckar. Lakes are numerous, and include a considerable part of the Lake of Constance. The climate varies much. The hilly parts, especially in the east, are cold and have a long winter, while the valley of the Rhine enjoys the finest climate of Germany. The principal minerals worked are coal, salt, iron, zinc, and nickel. The number of mineral springs is remarkably great, and of these not a few are of great celebrity. The vegetation is peculiarly rich, and there are magnificent forests. The cereals comprise wheat, oats, barley, and rye. Potatoes, hemp, tobacco, wine, and sugar-beet are largely produced. Several of the wines, both white and red, rank in the first class. Baden has long been famous for its fruits also. Of the total area 42 per cent is under cultivation, 37 per cent under forest, and 17 per cent under meadows and pastures. The farms are mostly quite small. The manufactures are important. Among them are textiles, tobacco and cigars, chemicals, machinery, pottery ware, jewelry (especially at Pforzheim), wooden clocks, confined chiefly to the districts of the Black Forest, musical boxes and other musical toys. The capital is Karlsruhe, about 5 miles from the Rhine; the other chief towns are Mannheim, Freiburg-im-Breisgau, with a Roman Catholic university; Baden, and Heidelberg. Baden has warm mineral springs, which were known and used in the time of the Romans. Heidelberg has a university (Protestant), founded in 1386, the oldest in the present German Empire. The railways have a length of 850 miles, and are nearly all state property. In the time of the Roman Empire southern Baden belonged to the Roman province of Rhætia. Under the old German Empire it was a margraviate, which in 1533 was divided into Baden-Baden and Baden-Durlach, but reunited in 1771. The title of grand-duke was conferred by Napoleon in 1806, and in the same year Baden was extended to its present limits. The executive power is vested in the grand-duke, the legislative in a house of legislature, consisting of an upper and a lower chamber. The former consists partly of hereditary members; the latter consists of elected representatives of the people. The revenue is mainly derived from taxes

on land and incomes, and the produce of crown-lands, forests, and mines. The revenue and expenditure are each usually about £2,000,000. Baden sends three members to the German Bundesrath or Federal Council, and fourteen deputies to the Diet. Two-thirds of the population are Roman Catholics, the rest Protestants.

Baden (or *Baden-Baden*, to distinguish it from other towns of the same name; German *Bad*, a bath), a town and watering-place, Grand-duchy of Baden, 18 miles s.s.w. Karlsruhe, built in the form of an amphitheatre on a spur of the Black Forest, overhanging a valley, through which runs a little stream Oosbach. Baden has been celebrated from the remotest antiquity for its thermal baths; and it used also to be celebrated for its gaming saloons. It has many good buildings, and a castle, the summer residence of the grand-duke. Pop. 1890, 13,884.

Baden, a town of Austria, 15 miles s.w. of Vienna. It has numerous hot sulphurous springs, used both for bathing and drinking, and very much frequented. Pop. 9645.

Baden, a small town of Switzerland, canton Aargau, celebrated for its hot sulphurous baths, which attract many visitors. Pop. 4000.

Badge (baj), a distinctive device, emblem, mark, honorary decoration, or special cognizance, used originally to identify a knight or distinguish his followers, now worn as a sign of office or licensed employment, as a token of membership in some society, or generally as a mark showing the relation of the wearer to any person, occupation, or order.

Badger (baj'ér), a plantigrade, carnivorous mammal, allied both to the bears and to the



Badger (*Meles vulgāris*).

weasels, of a clumsy make, with short thick legs, and long claws on the fore-feet. The common badger (*Meles vulgāris*) is as large as a middling-sized dog, but much lower on the legs, with a flatter and broader body,

very thick tough hide, and long coarse hair. It inhabits the north of Europe and Asia, burrows, is indolent and sleepy, feeds by night on vegetables, small quadrupeds, &c. Its flesh may be eaten, and its hair is used for artists' brushes in painting. The American badger belongs to a separate genus. *Badger baiting*, or *drawing the badger*, is a barbarous sport formerly, and yet to some extent, practised, generally as an attraction to public-houses of the lowest sort. A badger is put in a barrel, and one or more dogs are put in to drag him out. When this is effected he is returned to his barrel, to be similarly assailed by a fresh set. The badger usually makes a most determined and savage resistance.

Badger Dog, a long-bodied, short-legged dog, with rather large pendulous ears, usually short haired, black, and with yellow extremities; often called by its German name *Dachshund*.

Bad'minton, an outside game closely resembling lawn-tennis, but played with battledore and shuttlecock instead of ball and racket: named after a seat of the Duke of Beaufort, in Gloucestershire.

Badrinath (-ät'), a peak of the main Himalayan range, in Garhwāl District, North-Western Provinces, 23,210 feet above the sea. On one of its shoulders at an elevation of 10,400 feet stands a celebrated temple of Vishnu, which some years attracts as many as 50,000 pilgrims.

Baedeker (bā'de-kër), KARL, a German publisher, born 1801, died 1859; originator of a celebrated series of guide-books for travellers.

Baena (bā-ā'nà), a town of Spain, in Andalusia, province of and 24 miles s.s.e. from Cordova. Pop. 12,944.

Baeza (bā-ā'thā; anciently, *Beatia*), a town, Spain, in Andalusia, 22 miles e.n.e. from Jaen, with 10,851 inhabitants. The principal edifices are the cathedral, the university (now suppressed), and the old monastery of St Philip de Neri.

Baffa (anc. *Paphos*), a seaport on the s.w. coast of Cyprus. Pop. 1000. It occupies the site of New Paphos, which, under the Romans, was full of beautiful temples and other public buildings. Old Paphos stood a little to the south-east.

Baffin, WILLIAM, an English navigator, born 1584; famous for his discoveries in the Arctic regions; in 1616 ascertained the limits of Baffin Bay; killed at the siege of Ormuz, in the East Indies, 1622.

Baffin Bay, on the N. E. of North America between Greenland and the islands that lie, on the N. of the continent; discovered by Baffin in 1616.

Bagasse', the sugar-cane in its dry crushed state as delivered from the mill, and after the main portion of its juice has been expressed; used as fuel in the sugar factory, and called also *cane-trash*.

Bagatelle', a game played on a long flat board covered with cloth like a billiard-table, with spherical balls and a cue or mace. At the end of the board are nine cups or sockets of just sufficient size to receive the balls. These sockets are arranged in the form of a regular octagon, with the ninth in the middle, and are numbered consecutively from one upwards. Nine balls are used, generally one black, four white, and four red, the distinction between white and red being made only for the sake of variety. In the ordinary game, at starting, the black ball is placed on a point in the longitudinal middle line of the board, a few inches in front of the nearest of the sockets, and the player places one of his eight balls on a corresponding point at the other end of the board, and tries to strike the black ball into one of the sockets with his own. After this his object is to place as many of his balls as possible in the sockets. Each ball so placed counts as many as the socket is numbered for, and the black ball always counts double. He who first makes the number of points agreed on wins.

Bagdad', capital of a Turkish pashalic of the same name (70,000 sq. miles, 1,000,000 inhabitants), in the southern part of Mesopotamia (now *Irak Arabi*). The greater part of it lies on the eastern bank of the Tigris, which is crossed by a bridge of boats; old Bagdad, the residence of the caliphs (now in ruins), was on the western bank of the river. The modern city is surrounded with a brick wall about 6 miles in circuit; the houses are mostly built of brick, the streets unpaved, and very narrow. The palace of the governor is spacious. Of the mosques, only a few attract notice; the bazaars are all large and well stocked; that of Dawd Pacha still ranks as one of the most splendid in the world. Manufactures: leather, silks, cottons, woollens, carpets, &c. Steamers ply on the river between Bagdad and Bassorah, and the town exports wheat, dates, galls, gum, mohair, carpets, &c., to Europe. Bagdad is inhabited by Turks, Arabs, Persians, Armenians, Jews, &c., and

a small number of Europeans. Estimated pop. over 100,000. The Turks compose three-fourths of the whole population. The city has been frequently visited by the plague, and in 1831 was nearly devastated by that calamity. Bagdad was founded in

762, by the Caliph Almansur, and raised to a high degree of splendour in the ninth century by Harun Al Rashid. It is the scene of a number of the tales of the 'Arabian Nights.' In the thirteenth century it was stormed by Hulaku, grandson



Bagdad, from the South.

of Genghis-Khan, who caused the reigning caliph to be slain, and destroyed the caliphate.

Bagehot (bāj'ot), WALTER, English economist and journalist, born at Langport, Somerset, 1826; died at the same place 1877. He graduated at the London University, 1848, and was for some time associated with his father in the banking business in London. He was one of the editors of the *National Review* (1855-64), and from 1860 till his death he was editor and part proprietor of the *Economist*. His chief works are: *Physics and Politics*, *The English Constitution*, *Lombard Street*, and *Studies, Literary, Biographic, and Economic*.

Bag'gala, a two-masted Arab boat, generally 200-250 tons burden, used for trading in the Indian Ocean, Red Sea, &c.

Baggesen (båg'e-sen), JENS, a Danish poet, who also wrote much in German; born 1764 at Korsör; died at Dresden, 1826. He tried lyric, epic, dramatic poetry, and both serious and humorous. His best productions are his smaller poems and songs, several of which are very popular with his countrymen.

Baghelkand, a tract of country in Central India, occupied by a collection of native states (Rewah being the chief), under the governor-general's agent for Central India; area, 11,323 sq. miles; pop. 1,512,595.

Bagheria, a town of Sicily. Pop. 12,000.

Bagirmi (bā-gir'mē), or BAGHERMI, a Mohammedan negro state in Central Africa, situated between Bornu and Waday, to the south of Lake Tchad. It is mostly a plain; has an area of about 56,000 sq. miles, and about 1,500,000 inhabitants. The people are industrious, and have attained to a considerable pitch of civilization.

Bagley, WORTH, Ensign, U. S. N., born Raleigh, N. C., was the first victim of the Spanish war. He was appointed to the Naval Academy, Sep. 7, 1891. After graduating was severally assigned to the Texas, Indiana, Montgomery and the ill-fated Maine. Was with the latter until Nov. 23, '97, when he was ordered to Baltimore as second officer of the torpedo-boat Winslow. In company with the Hudson and Wilmington, off Cardenas, May 11, she had an engagement with the enemy and her boiler was burst and Bagley and four others were killed. The Hudson towed her to safety.

Bagnacavallo, bān-yā-kā-vāl'lō), BARTOLOMEO RAMENGHI, Italian painter, born 1484, died 1542. Called Bagnacavallo from the village where he was born. At Rome he was a pupil of Raphael, and assisted in decorating the gallery of the Vatican.

Bagnara (bā-nyā'rā), a seaport near the s.w. extremity of Italy. Pop. 6749.

Bagnères de Bigorre (bân-yâr dé bē-gorr), a watering-place, France, department Hautes Pyrénées, on the left bank of the Adour. It owes its chief celebrity to its baths, which are sulphurous and saline, but it has also manufacturing and other industries. Pop. 7634.

Bagnères de Luchon (bân-yâr dé lû-shōn), a town, France, department Haute Garonne, in a valley surrounded by wooded hills, one of the principal watering-places of the Pyrenees, having sulphurous thermal waters,

said to be beneficial in rheumatic complaints. Resident pop. 4000.

Bagpipe, a musical wind-instrument of very great antiquity, having been used among the ancient Greeks, and being a favourite instrument over Europe generally in the fifteenth century. It still continues in use among the country people of Poland, Italy, the south of France, and in Scotland and Ireland. Though now often regarded as the national instrument of Scotland, especially Celtic Scotland, it is only Scottish by



Entrance to Port Nassau, Bahama Islands.

adoption, being introduced into that country from England. It consists of a leathern bag, which receives the air from the mouth, or from bellows; and of pipes, into which the air is pressed from the bag by the performer's elbow. In the common or Highland form one pipe (called the *chanter*) plays the melody; of the three others (called *drones*) two are in unison with the lowest A of the chanter, and the third and longest an octave lower, the sound being produced by means of reeds. The chanter has eight holes, which the performer stops and opens at pleasure, but the scale is imperfect and the tone harsh. There are several species of bagpipes, as the soft and melodious Irish bagpipe, supplied with wind by a bellows, and having several keyed drones; the old English bagpipe (now no longer used); the Italian bagpipe, a very rude instrument; &c.

Bagration (bâg-râ'tyōn), PETER, PRINCE, a distinguished Russian general, descended

from a noble Georgian family. He was born in 1756, entered the Russian service in 1783, and was constantly engaged in active service till he was mortally wounded at the battle of Borodino, Sept. 1812.

Bagshot-sand, in geol. the collective name for a series of beds of siliceous sand, occupying extensive tracts round Bagshot, in Surrey, and in the New Forest, Hampshire, the whole reposing on the London clay; generally devoid of fossils.

Baha'ma Islands, or LUCAYOS, a group of islands in the West Indies, forming a colony belonging to Britain, lying N.E. of Cuba and S.E. of the coast of Florida, the Gulf-stream passing between them and the mainland. They extend a distance of upwards of 600 miles, and are said to be twenty-nine in number, besides keys and rocks innumerable. The principal islands are Grand Bahama, Great and Little Abaco, Andros Islands, New Providence, Eleuthera, San

Salvador, Great Exuma, Watling Island, Long Island, Crooked Island, Acklin Island, Mariguana Island, Great Inagua. Of the whole group about twenty are inhabited, the most populous being New Providence, which contains the capital, Nassau, the largest being Andros, 100 miles long, 20 to 40 broad. They are low and flat, and have in many parts extensive forests. Total area, 5150 sq. miles. The soil is a thin but rich vegetable mould, and the principal product is pine-apples, which form the most important export. Other fruits are also grown, with cotton, sugar, maize, yams, ground-nuts, coco-nuts, &c. Sponges are obtained in large quantity and are exported. Total exports in 1889, £130,512. The currency is English, but American coins circulate freely. The islands are a favourite winter resort for those afflicted with pulmonary diseases. Watling Island is now by best authorities believed to be same as Guahanani, the land first touched on by Columbus (October 12, 1492) on his first great voyage of discovery. The first British settlement was made on New Providence towards the close of the seventeenth century. A number of loyal Americans settled in the islands after the war of independence. Pop. 47,278, including 14,000 whites.

Bahar', or **BARRE**, an East Indian measure of weight, varying considerably in different localities and in accordance with the substances weighed, the range being from 223 to 625 lbs.

Baha'walpur, a town of India, capital of state of same name in the Punjab, 2 miles from the Sutlej; surrounded by a mud wall and containing the extensive palace of the Nawab. Pop. 13,635. The state has an area of 15,000 sq. miles, of which 10,000 is desert, the only cultivated lands lying along the Indus and Sutlej. Pop. 1891, 650,042.

Bahia (bā-ē'ā; formerly *St. Salvador*), a town of Brazil, on the Bay of All Saints, province of Bahia. It consists of a lower town, which is little more than an irregular, narrow, and dirty street, stretching about 4 miles along the shore; and an upper town, with which it is connected by a steep street, much better built. The harbour is one of the best in South America; and the trade, chiefly in sugar, cotton, coffee, tobacco, hides, piassava, and tapioca, is very extensive. Pop. 150,000. The province, area, 164,649 square miles, pop. in 1888, 1,821,089, has much fertile land, both along the coast and in the interior.

Bahr (bär), an Arabic word signifying sea or large river; as in Bahr-el-Huleh, the Lake Merom in Palestine; Bahr-el-Abiad, the White Nile, Bahr-el-Azrek, the Blue Nile, which together unite at Khartoum.

Bahraich (bä-räch'), a flourishing town of India, in Oudh. Pop. 19,439.

Bahrein (bä'rīn) **Islands**, a group of islands in the Persian Gulf, in an indentation



on the Arabian coast. The principal island, usually called Bahrein, is about 27 miles in length and 10 in breadth. The principal town is Menamah or Manama; pop. 8000. The Bahrein Islands are chiefly noted for their pearl-fisheries, which were known to the ancients, and which employ in the season about 400 boats with from 8 to 20 men each. Total pop. estimated at 70,000.

Bahr-el-Ghazal, a large river of Central Africa, a western tributary of the White Nile.

Baiadeer. See *Bayadere*.

Baiæ (bī'ē), an ancient Roman watering-place on the coast of Campania, 10 miles west of Naples. Many of the wealthy Romans had country houses at Baiæ, which Horace preferred to all other places. Ruins of temples, baths, and villas still attract the attention of archæologists.

Baikal (bī'kāl), a large fresh-water lake in Eastern Siberia, 360 miles long, and about 50 in extreme breadth, interspersed with islands; lon. 104° to 110° E.; lat. 51° 20' to 55° 20' N. It is surrounded by rugged and lofty mountains; contains seals, and many fish, particularly salmon, sturgeon, and pike.

Its greatest depth is over 4000 feet. It receives the waters of the Upper Angara, Selenga, Barguzin, &c., and discharges its waters by the Lower Angara. It is frozen over in winter.

Baikie, WILLIAM BALFOUR, born in the Orkney Islands 1824, died at Sierra Leone 1863. He joined the British navy, and was made surgeon and naturalist of the Niger expedition, 1854. He took the command on the death of the senior officer, and explored the Niger for 250 miles. Another expedition, which started in 1857, passed two years in exploring, when the vessel was wrecked, and all the members, with the exception of Baikie, returned to England. With none but native assistants he formed a settlement at the confluence of the Benué and the Quorra, in which he was ruler, teacher, and physician, and within a few years he opened the Niger to navigation, made roads, established a market, &c.

Bail, the person or persons who procure the release of a prisoner from custody by becoming surety for his appearance in court at the proper time; also, the security given for the release of a prisoner from custody.

Bailen (bī-len'), a town of s. Spain, prov. Jaen, with lead mines. Pop. 10,041.

Bailey (bā'li), the name given to the courts of a castle formed by the spaces between the circuits of walls or defences which surrounded the keep.

Bailey, or BAILY, NATHANIEL, an English lexicographer, school teacher at Stepney, and author of several educational works. His dictionary, published in 1721, passed through a great many editions.

Bailey, PHILIP JAMES, English poet, born at Basford, Nottingham, 1816, and called to the bar in 1840. Published *Festus*, his best work, in 1839; *The Mystic*, 1855; *The Age*, 1858; and *The Universal Hymn*, 1867.

Bailie, **Baillie**, a municipal officer or magistrate in Scotland, corresponding to an *alderman* in England. The criminal jurisdiction of the provost and bailies of royal burghs extends to breaches of the peace, drunkenness, adulteration of articles of diet, thefts not of an aggravated character, and other offences of a less serious nature.

Bailiff, a civil officer or functionary, subordinate to some one else. There are several kinds of bailiffs, whose offices widely differ, but all agree in this, that the keeping or protection of something belongs to them. In England the sheriff is the monarch's bailiff, and his county is a bailiwick. The

name is also applied to the chief magistrates of some towns, to keepers of royal castles, as of Dover, to persons having the conservation of the peace in hundreds and in some special jurisdictions, as Westminster, and to the returning-officers in the same. But the officials commonly designated by this name are the *bailiffs* of sheriffs, or sheriffs' officers, who execute processes, &c.

Bailleul (bā-yeul), an ancient French town, department of Nord, near the Belgian frontier, about 19 m. west of Lille. Has manufactures of woollen and cotton stuffs, lace, leather, &c. Pop. 12,828.—A village of same name in dep. Orne gave its name to the Baliol family.

Baillie, JOANNA, a Scottish authoress, born at Bothwell, Lanarkshire, in 1762; died at Hampstead, 1851. She removed in early life to London, where her brother, Matthew Baillie, was settled as a physician. Here in 1798 she published her first work, entitled *A Series of Plays*, in which she attempted to delineate the stronger passions by making each passion the subject of a tragedy and a comedy. The series was followed up by a second volume in 1802, and a third in 1812. A second series appeared in 1836, and a complete edition of her whole dramatic works in 1850. She also published a volume of miscellaneous poetry, including songs, in 1841. Her only plays performed on the stage were a tragedy entitled the *Family Legend*, brought out at Edinburgh under the patronage of Sir Walter Scott; and *De Montfort*, brought out by John Kemble.

Baillie, MATTHEW, M.D., physician and anatomist, brother of the preceding, was born 1761 at Shotts, Lanarkshire; died at Cirencester, Gloucestershire, in 1823. In 1773 he was placed at the University of Glasgow. He afterwards studied anatomy under his maternal uncles John and William Hunter, and entered Oxford, where he graduated as M.D. In 1783 he succeeded his uncle as lecturer on anatomy in London, where he acquired a high reputation as a teacher and demonstrator, having also a large practice. In 1810 he was appointed physician to George III. His work on *The Morbid Anatomy of Some of the Most Important Parts of the Human Body* gave him a European reputation.

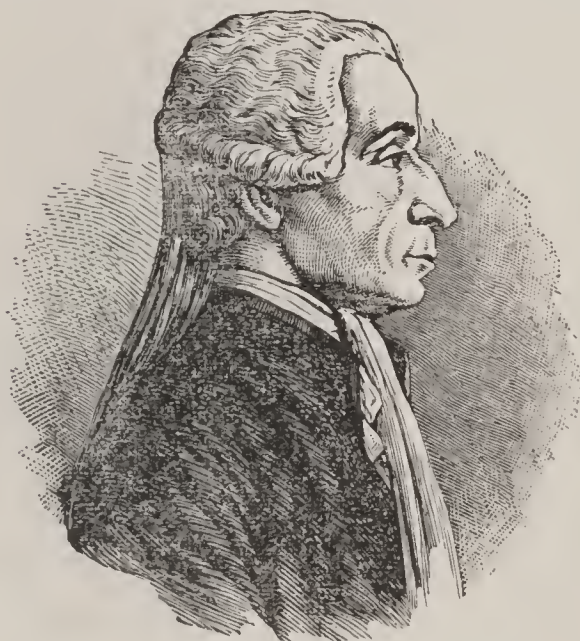
Baillie, ROBERT, an eminent Scottish Presbyterian clergyman, was born at Glasgow in 1599, died 1662. Though educated

and ordained as an Episcopalian, he resisted the attempt of Archbishop Laud to introduce his Book of Common Prayer into Scotland, and joined the Presbyterian party. In 1638 he represented the presbytery of Irvine in the General Assembly at Glasgow, which dissolved Episcopacy in Scotland. In 1640 he was selected to go to London, with other commissioners, to prepare charges against Archbishop Laud for his innovations upon the Scottish Church. Of this, and almost all the other proceedings of his public life, he has left a minute account in his letters and journals, which form a most valuable collection for the history of his time. In 1642 he was appointed professor of divinity at Glasgow. He was a member of the Westminster Assembly of Divines, and attended its sittings from 1643-46. After the Restoration, though made principal of his college through court patronage, he did not hesitate to express his dissatisfaction with the re-introduction of Episcopacy.

Baillie, ROBERT, of Jerviswood, in Lanarkshire, a Scottish patriot of the reign of Charles II. He brought himself into notice by opposing the tyrannical measures of Archbishop Sharpe against the Nonconformists, for which he was fined 6000 merks and imprisoned for four months. In 1683 he went to London in furtherance of a scheme of emigration to South Carolina taken up by a number of Scottish gentlemen, as being the only way of escaping the tyranny of the government. He became associated with Monmouth, Sydney, Russell, and the rest of that party, and was charged with complicity in the Rye-house plot. After a long imprisonment, during which vain attempts were made to obtain evidence against him, he was brought before the Court of Justiciary (23d Dec. 1684), was found guilty, and condemned to be executed that afternoon.

Bailly (bà-yē), JEAN SYLVAIN, French astronomer and statesman, born at Paris, 1736. After some youthful essays in verse he was induced by Lacaille to devote himself to astronomy, and on the death of the latter in 1753, being admitted to the Academy of Sciences, he published a reduction of Lacaille's observations on the zodiacal stars. In 1764 he competed ably but unsuccessfully for the Academy prize offered for an essay upon Jupiter's satellites, Lagrange being his opponent; and in 1771 he published a treatise on the light reflected by these satellites. In the meantime he had won distinc-

tion as a man of letters by his eulogiums on Pierre Corneille, Leibnitz, Molière, and others; and the same qualities of style shown by these were maintained in his *History of Astronomy* (1775-87), his most extensive work. In 1784 the French Academy



Jean Sylvain Bailly.

elected him a member. The revolution drew him into public life. Paris chose him, May 12, 1789, first deputy of the *tiers-état*, and in the assembly itself he was made first president, a post occupied by him on June 20, 1789, in the session of the Tennis Court, when the deputies swore never to separate till they had given France a new constitution. As mayor of Paris his moderation and impartial enforcement of the law failed to commend themselves to the people, and his forcible suppression of mob violence, July 17, 1791, aroused a storm which led to his resignation and retreat to Nantes. In 1793 he attempted to join Laplace at Mehun, but was recognized and sent to Paris, where he was condemned by the revolutionary tribunal, and executed on Nov. 12th.

Bailment, in law, is the delivery of a chattel or thing to a person in trust, either for the use of the bailer or person delivering, or for that of the bailee or person to whom it is delivered. A bailment always supposes the subject to be delivered only for a limited time, at the expiration of which it must be redelivered to the bailer, the responsibility of the bailee being dependent, in some degree, upon the contract on which the bailment is made. Pledging and letting for hire are species of bailment.

Baily, EDWARD HODGES, an English sculptor, born at Bristol 1788, died at London 1867. He became a pupil of Flaxman in 1807, gained the Academy Gold Medal in 1811, and was elected R.A. in 1821. Principal works: *Eve at the Fountain*; *Eve Listening to the Voice*; *Maternal Affection*; *Girl Preparing for the Bath*; *The Graces*, &c. The bas-reliefs on the south side of the Marble Arch, Hyde Park, the statue of Nelson on the monument, and various other public works, were from his chisel.

Baily, FRANCIS, astronomer, born in Berkshire, 1774; settled in London as a stockbroker in 1802. While thus actively engaged he published *Tables for the Purchasing and Renewing of Leases*, the *Doctrine of Interest and Annuities*, the *Doctrine of Life Annuities and Assurances*, and an epitome of universal history. On retiring from business with an ample fortune in 1825 he turned his attention to astronomy, became one of the founders of the Astronomical Society, contributed to its *Transactions*, and in 1835 published a life of Flamsteed. He died in 1844.

Baily's Beads, a phenomenon attending eclipses of the sun, the unobscured edge of which appears discontinuous and broken immediately before and after the moment of complete obscuration. It is classed as an effect of irradiation.

Bain, ALEXANDER, writer on mental philosophy and education, was born at Aberdeen in 1818. He was educated at Marischal College (then a separate university), Aberdeen; was for some years a deputy professor in the university; subsequently held official posts in London; and in 1860 was appointed professor of logic and English in Aberdeen University, a post which he held till his resignation in 1881. His most important works are: *The Senses and the Intellect* (1855); *the Emotions and the Will* (1859), together forming a complete exposition of the human mind; *Mental and Moral Science* (1868); *Logic, Deductive and Inductive* (1870); *Mind and Body* (1873); *Education as a Science* (1879); *James Mill, a Biography* (1881); *John Stuart Mill, a Criticism with Personal Recollections* (1882); besides an *English Grammar*, *Manual of English Composition and Rhetoric*, &c.

Bairam (bī'ram), the Easter of the Mohammedans, which follows immediately after the Ramadan or Lent (a month of fasting), and lasts three days. This feast during the

course of thirty-three years makes a complete circuit of all the months and seasons, as the Turks reckon by lunar years. Sixty days after this first great Bairam begins the lesser Bairam. They are the only two feasts prescribed by the Mohammedan religion.

Baird, SIR DAVID, a distinguished British commander, was born in Edinburghshire in 1757, and entered the army 1772. Having been promoted to a lieutenancy in 1778 he



Sir David Baird.

sailed for India, distinguished himself as a captain in the war against Hyder Ali, was wounded and taken prisoner, and confined in the fortress of Seringapatam for nearly four years. He and his fellow-prisoners were treated with great barbarity, and many of them died or were put to death, but at last (in 1784) all that survived were set at liberty. After his release he received, in 1787, his majority, and in 1791 joined the army under Cornwallis as lieutenant-colonel, and was appointed to the command of a brigade in the war against Tippoo. After much hard service he received a colonelcy in 1795, went in 1797 to the Cape of Good Hope as brigadier-general, and in 1798, on his appointment as major-general, returned to India. In 1799 he commanded the storming party at the assault of Seringapatam, and, in requital, was presented with the state sword of Tippoo Saib. Being appointed in 1800 to command an expedition to Egypt, he landed at Kosseir in June, 1801, crossed the desert, and, embarking on the Nile, descended to Cairo, and thence to Alexandria, which he reached a few days before

it surrendered to General Hutchinson. Next year he returned to India, but being soon after superseded by Sir Arthur Wellesley (Wellington), he sailed for Britain, where he was knighted and made K.C.B. With the rank of lieutenant-general he commanded an expedition in 1805 to the Cape of Good Hope, and in 1806, after defeating the Dutch, he received the surrender of the colony. He commanded a division at the siege of Copenhagen, and after a short period of service in Ireland sailed with 10,000 men for Corunna, where he formed a junction with Sir John Moore. He commanded the first division of Moore's army, and in the battle of Corunna lost his left arm. By the death of Sir John Moore Sir David succeeded to the chief command, receiving for the fourth time the thanks of Parliament, and a baronetcy. In 1814 he was made a general. He died in 1829.

Baird, SPENCER FULLERTON, American naturalist, born 1823, died 1887. He was long assistant secretary, and latterly secretary, of the Smithsonian Institution, Washington, and was also chief government commissioner of fish and fisheries. He wrote much on natural history, his chief works being *The Birds of N. America* (in conjunction with John Cassin); *The Mammals of N. America*; *Review of American Birds in the Smithsonian Institution*; and (with Messrs. Brewer and Ridgeway), *History of N. American Birds*.

Baireuth (bī'roit), a well-built and pleasantly-situated town of Bavaria, on the Red Main, 41 miles north-east of Nürnberg. The principal edifices, besides churches, are the old and the new palace, the opera-house, the gymnasium, and the national theatre, constructed after the design of the composer Wagner, and opened in 1876 with a grand performance of his tetralogy of the *Nibelungen Ring*. Industries: cotton spinning, sugar refining, musical instruments, sewing-machines, leather, brewing, &c. There is a monument to Jean Paul F. Richter, who died here. Pop. 1890, 24,556.

Baius, or DE BAY, MICHAEL, Catholic theologian, was born 1513, in Hainaut, educated at Louvain, made professor of theology there in 1563 or 1564, and chosen a member of the Council of Trent. Leaving the scholastic method, he founded systematic theology directly upon the Bible and the Christian fathers, of whom he particularly followed St. Augustine. His doctrines of original sin and of salvation by grace

led to his persecution as a heretic by the old Scotists, and the Jesuits, who succeeded in obtaining a Papal bull in 1567, condemning the doctrines imputed to him. Baius, however, remained in the possession of his dignities, was appointed in 1578 chancellor of Louvain University; and the King of Spain even conferred upon him the office of inquisitor-general in the Netherlands. He died in 1589. His Augustinian views descended to the Jansenists, while his doctrine of pure undivided love to God formed the staple of Quietism.

Baize, a sort of coarse woollen fabric with a rough nap, now generally used for linings, and mostly green or red in colour.

Baja (bā'yā), a market town of Hungary, district of Bacs, on the Danube, with a trade in grain and wine, and a large annual hog fair. Pop. 19,241.

Bajaderes. See *Bayaderes*.

Bajazet (bā-yā-zet'), or BAYASID, I., Turkish emperor, who, in 1389, having strangled his brother Jacob, succeeded his father Murad or Amurath, who fell in the battle of Cassova against the Servians. From the rapidity of his conquests he received the name of *Ilderim*, the Lightning. In three years he subjected Bulgaria, part of Servia, Macedonia, Thessaly, and the states of Asia Minor, and besieged Constantinople for ten years, defeating Sigismund and the allied Hungarians, Poles, and French, in 1395. The attack of Timur (Tamerlane) on Natolia, in 1400, saved the Greek Empire, Bajazet being defeated and taken prisoner by him near Ancyra, Galatia, 1402. The story of his being carried about in a cage by Timur is improbable; but Bajazet died in 1409, in Timur's camp, in Caramania. His successor was Soliman I.

Bajazet II. succeeded his father, Mohammed II., sultan of the Turks, in 1481. He increased the Turkish Empire by conquests on the N.W. and in the E., took Lepanto, Modon, and Durazzo in a war against the Venetians, and ravaged the coasts of the Christian states on the Mediterranean, to revenge the expulsion of the Moors from Spain. Having abdicated in favour of his younger son Selim he died on his way to a residence near Adrianople in 1513. He did much for the improvement of his empire and the promotion of the sciences.

Bajimont's Roll. See *Bagimont's Roll*.

Bajocco, or BAIOTTO (bā-yok'o), was a copper coin in the Papal States, the hun-

dredth part of a scudo, or rather more than a halfpenny. The name was also given in Sicily to the Neapolitan *grano*, the hundredth part of the ducato 80 cts.

Bajus. See *Baius*.

Bajza (boi'za), ANTON, Hungarian lyric poet, historian, and critic, born 1804, died 1858. As contributor and editor of various periodicals he played an important part in the development of modern Hungarian literature and drama. A volume of his poems, of high merit, was published in 1835. He also translated a collection of foreign dramas, and edited a series of historical works.

Bakalaha'ri, a Bechuana tribe inhabiting the Kalahari Desert, S. Africa.

Bak'arganj, a maritime district and town in Bengal; chief rivers: Ganges, Brahmaputra, and Meghna. Area, 3649 sq. miles. Pop. 1,900,889. The town now lies in ruins. Pop. 7060.

Bakau (bä'kou), a town of Roumania, on the Bistritza. Pop. 13,118.

Bakchisarai (bäk-chi-sä-rī'), or BAGTCHE-SERAI (bäg-che-se-rī; Turkish, 'Garden Palace'), an ancient town of Russia, in the Crimea, picturesquely situated at the bottom of a narrow valley, hemmed in by precipices. It contains the palace of the ancient Crimean khans, restored by the Russian government. Pop. 11,448.

Baker, SIR RICHARD, an English historian, born in Kent in 1563, educated at Oxford, knighted in 1603 by James I., and in 1620 appointed high sheriff of Oxfordshire, where he had estates. Having given security for a debt incurred by his wife's family, he was thrown into Fleet Prison, where, after continuing some years, he died in 1645. During his imprisonment he wrote some devotional books and his Chronicle of the Kings of England, first published in 1641, and afterwards continued by Edward Phillips, the nephew of Milton, and others—a work of great popularity in its day, though of no permanent value.

Baker, SIR SAMUEL WHITE, a distinguished English traveller, born in 1821. He resided some years in Ceylon; in 1861 began his African travels, which lasted several years, in the Upper Nile regions, and resulted, among other discoveries, in that of Albert Nyanza lake in 1864, and of the exit of the White Nile from it. In Africa he encountered Speke and Grant after their discovery of the Victoria Nyanza. On his return home he was received with great honour and was knighted. In 1869

he returned to Africa as head of an expedition sent by the Khedive of Egypt to annex and open up to trade a large part of the newly explored country, being raised to the dignity of pasha. He returned in 1873, having finished his work, and was succeeded by the celebrated Gordon. Since then he has travelled much. His writings include: The Rifle and the Hound in Ceylon; Eight Years' Wanderings in Ceylon; The Albert Nyanza, &c.; The Nile Tributaries of Abyssinia; Ismailia: a Narrative of the Expedition to Central Africa; Cyprus as I saw it in 1879; also, Cast up by the Sea, a story published in 1869. He died Dec. 30, 1893.

Baker, THOMAS, antiquary, born 1656, educated at Cambridge. As a non-juror he lost his living at Long-Newton in 1690, and was compelled to resign his fellowship on the accession of George I., but continued to reside at St. John's College till his death in 1740. His Reflections on Learning (1709–10) went through seven editions. He left in MS. forty-two folio volumes of an "Athenæ Cantabrigienses," from which a "History of St. John's College" was edited by Professor Mayor in 1869.

Bakewell, an ancient market-town, England, county of Derby, between Buxton and Matlock, possessing a fine Gothic church, a chalybeate spring, a cotton-mill erected by Arkwright, and a large marble-cutting industry. Pop. 1891, 2748.

Bakewell, ROBERT, an English agriculturist, celebrated for his improvements in the breeding of sheep, cattle, and horses, was born in Leicestershire in 1725, and died in 1795. He commenced experiments in breeding sheep about 1755, upon his father's farm at Dishley, and for fifty years devoted himself to the acquisition and diffusion of information upon the subject. He was the originator of the new Leicestershire breed of sheep, which have since been so well known, and also of a breed of cattle that had great repute in their day. Various improvements in farm management were also introduced by him.

Bakhmut. See *Bachmut*.

Bakhuisen. See *Backhuysen*.

Baking, a term used in various senses. For the baking of bread, see *Bread*. A common application of the term is to a mode of cooking food in a close oven, baking in this case being opposed to roasting or broiling, in which an open fire is used. The oven should not be too close, but ought to be properly ventilated. Baking is also applied

to the hardening of earthenware or porcelain by fire.

Baking Powder, a mixture of bicarbonate of soda and tartaric acid, usually with some flour added. The water of the dough causes the liberation of carbonic acid, which makes the bread 'rise.'

Bakony (bâ-kon'yè) **Wald**, a thickly-wooded mountain range dividing the Hungarian plains, famous for the herds of swine fed on its mast.

Bakshish', an Eastern term for a present or gratuity. A demand for bakshish meets travellers in the East everywhere from Turkey and Egypt to Hindustan.

Baku (bâ-kö'), a Russian port on the western shore of the Caspian, occupying part of the peninsula of Apsheron. The naphtha or petroleum springs of Baku have long been known; and the Field of Fire, so called from emitting inflammable gases, has long been a place of pilgrimage with the Guebres or Fire-worshippers. Recently, from the development of the petroleum industry, Baku has greatly increased, and is now a large and flourishing town. About 400 oil-wells are in operation, producing immense quantities of petroleum, much of which is led direct in pipes from the wells to the refineries in Baku, and it is intended to lay a pipe for its conveyance all the way to the Black Sea at Batoum, which is already connected with Baku by railway. Some of the wells have had such an outflow of oil as to be unmanageable, and the Baku petroleum now competes successfully with any other in the markets of the world. Baku is the station of the Caspian fleet, is strongly fortified, and has a large shipping trade. Pop. in 1870, 12,400; in 1888, 86,611.

Baku'nin, **MICHAEL**, Russian socialist, the founder of Nihilism, born 1814 of rich and noble family, entered the army, but threw up his commission after two years' service, and studied philosophy at Moscow, with his friends Herzen, Turgenieff, Granowski (historian), and Belinski (critic). Having adopted Hegel's system as the basis of a new revolution, he went in 1841 to Berlin, and thence to Dresden, Geneva, and Paris, as the propagandist of anarchism. Wherever he went he was influential for disturbance, and after undergoing imprisonment in various states, was handed over to Russia in 1851 by Austria, imprisoned for five years, and finally sent to Siberia. Escaping thence through Japan, he joined Herzen in Lon-

don on the staff of the Kolokol. His extreme views, however, ruined the paper and led to a quarrel with Marx and the International; and having fallen into disrepute with his own party in Russia, he died suddenly and almost alone at Berne, in 1878. He demanded the entire abolition of the state as a state, the absolute equalization of individuals, and the extirpation of hereditary rights and of religion, his conception of the next stage of social progress being purely negative and annihilatory.

Bala, a lake 4 miles long, and a small town of N. Wales, in Merionethshire.

Balaam (bā'lam), a heathen seer. invited by Balak, king of Moab, to curse the Israelites, but compelled by miracle to bless them instead (Numbers xxii.-xxiv.). In another account he is represented as aiding in the perversion of the Israelites to the worship of Baal, and as being, therefore, slain in the Midianitish war (Numbers xxxi.; Joshua xiii.). He is the subject of many rabbinical fables, the Targumists and Talmudists regarding him, as most of the fathers did, in the light of an impious and godless man.

Bala Beds, a local deposit, in the Bala district, North Wales, consisting of slates, grits, sandstones, and limestones, there being two limestones separated by sandy and slaty rocks about 1400 ft. thick. They contain trilobites of many species, as well as other fossils. The lower Bala limestone (25 ft. thick) may be traced over a large area in North Wales.

Balachong', an oriental condiment, composed of small fishes, or shrimps, pounded up with salt and spices and then dried.

Balæ'na, the genus which includes the Greenland or right whale, type of the family Balænidæ, or whale-bone whales.

Balæ'niceps ('whale-head'), a genus of wading birds belonging to the Soudan, intermediate between the herons and storks, and characterized by an enormous bill, broad and swollen, giving the only known species (*B. rex*), also called shoe-bird, a peculiar appearance. It feeds on fishes, water-snakes, carrion, &c., and makes its nest in reeds or grass adjoining water. The bill is yellow, blotched with dark brown, the general colour of the plumage dusky gray, the head, neck, and breast slaty, the legs blackish.

Balænop'tera, the genus to which the rorqual whale belongs. See *Rorqual*.

Balagarh (bâ-lâ-gar'), town of Hindustan, in the Punjab. Pop. 11,233.

BALAKLAVA — BALANCE.

Balaklava (bà-là-klä'vâ), a small seaport in the Crimea, 8 miles s.s.e. Sevastopol, consisting for the most part of houses perched upon heights, with an old Genoese castle on an almost inaccessible elevation. The harbour has a very narrow entrance, and though deep, is not capacious. In the Crimean war it was captured by the British, and a heroically fought battle took place

here (Oct. 25, 1854), ending in the repulse of the Russians by the British. The "charge of the Light Brigade" was at this battle.

Balalai'ka, a musical instrument of very ancient Slavonic origin, common among the Russians and Tartars. It is a narrow, shallow guitar with only two strings.

Bal'ance, an instrument employed for determining the quantity of any substance



Balaklava Harbour.

equal to a given weight. Balances are of various forms; in that most commonly used a horizontal beam rests so as to turn easily upon a certain point known as the centre of motion. From the extremities of the beam, called the centres of suspension, hang the scales; and a slender metal tongue midway between them, and directly over the centre of motion, indicates when the beam is level. The characteristics of a good balance are: 1st, that the beam should rest in a horizontal position when the scales are either empty or loaded with equal weights; 2d, that a very small addition of weight put into either scale should cause the beam to deviate from the level, which property is denominated the *sensibility* of the balance; 3d, that when the beam is deflected from the horizontal position by inequality of the

weights in the scales, it should have a tendency speedily to restore itself and come to rest in the level, which property is called the *stability* of the balance. To secure these qualities the arms of the beam should be exactly similar, equal in weight and length, and as long as possible; the centres of gravity and suspension should be in one straight line, and the centre of motion immediately above the centre of gravity; and the centre of motion and the centres of suspension should cause as little friction as possible. The centre of motion ought to be a knife-edge; and if the balance requires to be very delicate, the centres of suspension ought to be knife-edges also. If the balance have no tendency to one position more than another, when the scales are either loaded, empty, or off altogether, it is

a proof that the centres of gravity and motion coincide, and the remedy is to lower the centre of gravity. If the beam is disturbed by a small addition of weight to either scale, and exhibits no tendency to resume the horizontal position, we may infer that the centre of gravity is above the centre of motion. If it require a considerable excess of weight to deflect the beam from the level, we may infer either that there is too much friction at the centre of motion, or that the centre of gravity is too low. If two weights are found to be in equipoise, one being in each scale, and if, when that which is in the one scale is put into the other, there is no longer equilibrium, then we may infer that the arms of the beam are of unequal lengths. For purposes of accuracy, balances have occasionally means of raising or depressing the centre of gravity, of regulating the length of the arms, &c., and the whole apparatus is not unfrequently inclosed in a glass case, to prevent the heat from expanding the arms unequally, or currents of air from disturbing the equilibrium.

Of the other forms of balance, the Roman balance, or *steelyard*, consists of a lever moving freely upon a suspended fulcrum, the shorter arm of the lever having a scale or pan attached to it, and the longer arm, along which slides a weight, being graduated to indicate quantities. It is commonly used for weighing loaded carts, for luggage at railway-stations, &c. A variety of this, the Danish balance, has the weight fixed at the end of the lever, the fulcrum being movable along the graduated index. The *spring-balance* shows the weight of articles by the extent to which they draw out or compress a spiral spring. It is of service where a high degree of exactness is not required, and finds application in the dynamometer for measuring the force of machinery. An extremely ingenious balance, used in the Mint and the Bank of England for weighing 'blanks' and sovereigns, distributes them automatically into three compartments according as they are light, heavy, or the exact weight.

Balance of Power, a political principle which first came to be recognized in modern Europe in the sixteenth century, though it appears to have been also acted on by the Greeks in ancient times, in preserving the relations between their different states. The object in maintaining the balance of power is to secure the general independence

of nations as a whole, by preventing the aggressive attempts of individual states to extend their territory and sway at the expense of weaker countries. The first European monarch whose ambitious designs induced a combination of other states to counteract them, was the Emperor Charles V.; similar coalitions being formed in the end of the seventeenth century, when the ambition of Louis XIV. excited the fears of Europe, and a century later against the exorbitant power and aggressive schemes of the first Napoleon. More recently still we have the instance of the Crimean war, entered into to check the ambition of Russia. Of late years there has been a marked tendency among British politicians to decry and impugn the principle of the balance of power, as calculated only to propagate a system of mutual hostility, and retard the cause of progress, by the expenditure both of money and life thus occasioned. There can be no doubt, however, that to the carrying out of this principle the independence of some of the smaller and weaker European states is fairly attributable.

Balance of Trade, the difference between the stated money values of the exports and imports of a country. The balance is erroneously said to be 'in favour' of a country when the value of the exports is in excess of that of the imports and 'against it' when the imports are in excess of the exports. The phrases date from the days of the mercantile system, the characteristic doctrine of which alleged the desirability of regulating commerce with a view to amassing treasure by exporting produce largely, importing little merchandise in return, and receiving the balance in bullion. In certain conceivable political and industrial conditions this may have had beneficial results; but its importance was greatly over-estimated, and the state of this balance came to be regarded as an invariable criterion of the industrial condition of a country. The false analogy of the successful merchant who gains more than he spends became the basis of popular reasoning, the products of a country being mistakenly identified with its exports, its consumption with its importation. It is now generally recognized that if bullion be exported from a country it is because it is at the time the cheapest commodity available for export; and further, that there are certain natural limits to its undue exportation, in that the increased

scarcity of money is attended with a fall in the money-value of other commodities, which thus in turn become preferable objects of exportation, while bullion flows back. The excess of the value of imports over that of exports, which is regarded by some as an adverse and alarming symptom in British trade, is in large part readily accounted for on the ground of shipping receipts, insurance returns, interest on capital employed in foreign trade, merchants' profits, and the income derived from foreign investments.

Balanus ('acorn-shells'), a genus of sessile cirripeds, family Balanidæ, of which colonies are to be found on rocks at low water, on timbers, crustaceans, shells of mollusca, &c. They differ from the barnacles in having a symmetrical shell, and being destitute of a flexible stalk. The shell consists of six plates, with an operculum of four valves. They pass through a larval state in which they are not fixed, moving by means of swimming feet which disappear in the final state. All the Balanidæ are hermaphrodite. A S. American species (*Balanus psittacus*) is eaten on the coast of Chili, the *Balanus tintinnabulum* by the Chinese. The old Roman epicures esteemed the larger species.

Balapur', town of India in Akola district, Berar, with strong fort and fine pavilion of black stone. Pop. 11,244.

Bal'as, a name used to distinguish the rose-coloured species of ruby from the ruby proper.

Balazor', a seaport town, Hindustan, presidency of Bengal, province of Orissa, headquarters of a district and subdivision bearing the same name. It carries on a considerable traffic with Calcutta. Pop. 20,265.

Bala'ta, a gum yielded by *Mimærops Balata*, a tree growing abundantly in British, French, and Dutch Guiana, Honduras and Brazil, obtained in a milky state by 'tapping' the tree, and hardening to a substance like leather. Used for similar purposes to india-rubber, and in the U. States chewed as a masticatory.

Bal'aton, or PLATTENSEE, a lake of Hun-

gary, 55 miles s.w. of Pesth; length, 50 miles; breadth, 3 to 10 miles; area, about 390 squares miles. Of its 32 feeders the Szala is the largest, and the lake communicates with the Danube by the rivers Sio and Sarviz. It abounds with a species of perch.

Balbec. See *Baalbek*.

Balbi, ADRIEN, geographer and statistician, born at Venice in 1782. In 1808 his first work on geography procured his appointment as professor of geography in the College of San Michele at Murano, and he became in 1811 professor of natural philosophy in the Lyceum at Fermo. In 1820 he proceeded to Portugal, and collected there materials for his *Essai Statistique sur le Royaume de Portugal et d'Algarve* and *Variétés Politiques et Statistiques de la Monarchie Portugaise*, both published in 1822 at Paris, where he resided till 1832. He then settled in Padua, where he died in 1848. Balbi's admirable *Abrégé de Géographie* was written at Paris, and translated into the principal European languages.

Balbi, GASPÀRO, a Venetian dealer in precious stones, born about the middle of the sixteenth century, who travelled first to Aleppo and thence down the Euphrates and Tigris to the Malabar coast, sailing finally for Pegu, where he remained for two years. His *Viaggio all' Indie Orientale*, published on his return to Venice in 1590, contains the earliest account of India beyond the Ganges.

Balbo, CESÀRE, Italian author and statesman, born 1789 at Turin. After holding one or two posts under the patronage of Napoleon he devoted himself to history, publishing the history of Italy prior to the period of Charlemagne, a compendium of Italian history, &c. His *Speranze d'Italia* (1843), a statement of the political condition of Italy, and of the practicable ideals to be kept in view, gave him a wide reputation. He died in 1853.

Balbo'a, VASCO NUÑEZ DE, one of the early Spanish adventurers in the New World; born 1475. Having dissipated his fortune, he went to America, and was at Darien with the expedition of Francisco de Enciso in 1510. An insurrection placed him at the head of the colony, but rumours of a western ocean and of the wealth of Peru led him to cross the isthmus. On Sept. 25, 1513, he saw for the first time the Pacific, and after annexing it to Spain, and acquiring information about Peru, returned to Darien. Here he found himself supplanted



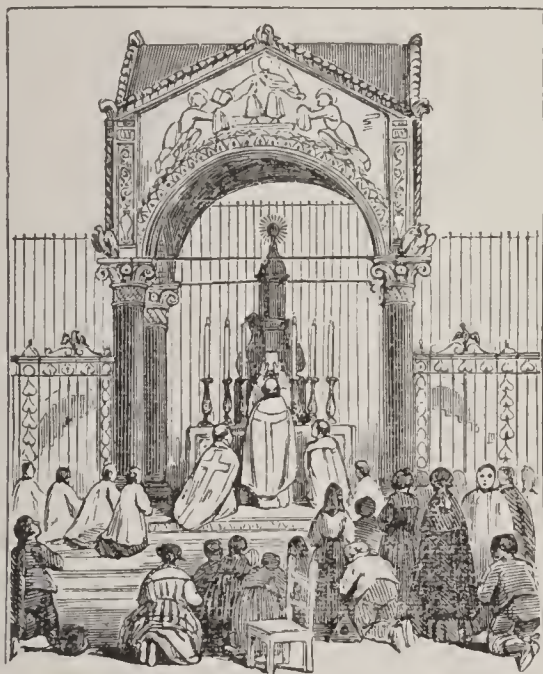
Group of
Balanus tintinnabulum

by a new governor, Pedrarias Davila, with much consequent grievance on the one side, and much jealousy on the other. Balboa submitted, however, and in the following year was appointed viceroy of the South Sea. Davila was apparently reconciled to him, and gave him his daughter in marriage, but shortly after, in 1517, had him beheaded on a charge of intent to rebel. Pizarro, who afterwards completed the discovery of Peru, served under Balboa.

Balbriggan, a seaport and favourite watering-place, Ireland, county of Dublin; celebrated for its hosiery. Pop. 2443.

Bal'cony, in architecture, is a gallery projecting from the outer wall of a building, supported by columns or brackets, and surrounded by a balustrade. Balconies were not used in Greek and Roman buildings, and in the East the roof of the house has for centuries served similar purposes on a larger scale. Balconies properly so styled came into fashion in Italy in the middle ages, and were apparently introduced into Britain in the sixteenth century.

Bal'dachin (-kin; It. *baldachino*), a canopy or tent-like covering of any material,



Baldachin, Church of S. Ambrogio, Milan.

either suspended from the roof, fastened to the wall, or supported on pillars over altars, thrones, pulpits, beds, portals, &c. Portable baldachins of rich materials were formerly used to shield the heads of dignitaries in processions, and are still so used in the processions of the Catholic Church, and in the East. The enormous bronze baldachin of

Bernini placed over the tomb of the apostles in St. Peter's at Rome is one of the most famous, though surpassed in beauty by many in other European cathedrals and churches.

Balder, or **BALDUR**, a Scandinavian divinity, represented as the son of Odin and Frigga, beautiful, wise, amiable, and beloved by all the gods. His mother took an oath from every creature, and even from every inanimate object, that they would not harm Balder, but omitted the mistletoe. Balder was therefore deemed invulnerable, and the other gods in sport flung stones and shot arrows at him without harming him. But the evil god Loki fashioned an arrow from the mistletoe and got Balder's blind brother Höder to shoot it, himself guiding his aim. Balder fell dead, pierced to the heart, to the deep grief of all the gods. He is believed to be a personification of the brightness and beneficence of the sun. See *Northern Mythology*.

Baldi, **BERNARDINO**, mathematician, theologian, geographer, historian, poet, &c., born at Urbino 1533; studied at Padua; became abbot of Guastalla. He knew upwards of twelve languages, and is said to have written over a hundred works, most of which remain in MS. His works include a poem on Navigation, various translations and commentaries, *Lives of Celebrated Mathematicians*, &c. He died in 1617.

Baldness, loss of the hair, complete or partial, usually the latter, and due to various causes. Most commonly it results as one of the changes belonging to old age, due to wasting of the skin, hair sacs, &c. It may occur as a result of some acute disease, or at an unusually early age, without any such cause. In both the latter cases it is due to defective nourishment of the hair, owing to lessened circulation of the blood in the scalp. The best treatment for preventing loss of hair seems to consist in such measures as bathing the head with cold water and drying it by vigorous rubbing with a rough towel and brushing it well with a hard brush. Various stimulating lotions are also recommended, especially those containing cantharides. But probably in most cases senile baldness is unpreventible. When extreme scurfiness of the scalp accompanies loss of the hair an ointment that will clear away the scurf will prove beneficial.

Baldovinet'ti, **ALESSIO**, Florentine artist, born 1422. Few of his works remain except a nativity in the church of the Annunziato,

and two altar-pieces in the gallery of the Uffizi and the Academy of Arts, Florence. Died 1499.

Baldric (bal'd'rik), a broad belt formerly worn over the right or left shoulder diagonally across the body, often highly decorated and enriched with gems, and used not only to sustain the sword, dagger, or horn, but also for purposes of ornament, and as a military or heraldic symbol. The fashion appears to have reached its height in the fifteenth century.

Bal'dung, **HANS**, or **HANS GRÜN** (grün), German painter and wood engraver, born in Swabia 1470, died in Strasburg 1552. His work, though inferior to Dürer's, possessed many of the same characteristics, and on this account he has been sometimes considered a pupil of the Nuremberg master. His principal paintings are the series of panels (of the date 1516) over the altar in Freiburg cathedral; others of his works are to be found at Berlin, Colmar, and Basel. His numerous and often fantastic engravings have the monogram H. and B., with a small G in the centre of the H.

Baldwin I., Emperor of Constantinople, founder of the short-lived dynasty of Latin sovereigns of the Eastern empire, was born in 1172, and was hereditary Count of Flanders and Hainault. His courage and conduct in the fourth crusade led to his unanimous election as Emperor of the East after the capture of Constantinople by the French and Venetians in 1204. In the absence of Bal'dwin's brother with a large part of the army, the Greeks rose in revolt under the instigation of Joannices, King of Bulgaria. Baldwin marched on Adrianople, but was taken prisoner and died in captivity, 1206. Baldwin was succeeded by his brother Henry.

—**Baldwin II.**, fifth and last Latin Emperor of Constantinople, was born 1217. During his minority John de Brienne was regent, but on his assuming the power himself the empire fell to pieces. In 1261 Constantinople was taken by the forces of Michael Palæologus, and Baldwin retired to Italy, dying in 1270.

Baldwin I., King of Jerusalem, reigned 1100–18, having assumed the title which his elder brother Godfrey de Bouillon had refused. He subdued Cæsarea, Ashdod, Tripolis, and Acre.—**Baldwin II.**, his cousin and successor, reigned from 1118–31. During his reign the reduction of Tyre and institution of the order of Templars took place.—**Baldwin III.**, King of Jerusalem

from 1143 to 1162, was son and successor of Foulques of Anjou, and the embodiment of the best aspects of chivalry. After defeating Nouredin in 1152, and again in 1157, he was enabled to devote himself to the hopeless task of improving the kingdom and establishing the Christian chivalry in the East. His death in 1162 was almost immediately followed by the total collapse of the kingdom.

Bâle (bäl). See *Basel*.

Bale, **JOHN**, an English ecclesiastic, born in Suffolk in 1495, died in 1563. Although educated a Roman Catholic, he became a Protestant, and the intolerance of the Catholic party drove him to the Netherlands. On the accession of Edward VI. he returned to England, was presented to the living of Bishop's Stoke, Southampton, and soon after nominated Bishop of Ossory, in Ireland. Here, on his preaching the reformed religion, the popular fury against him reached such a pitch that in one tumult five of his domestics were murdered in his presence. On the accession of Mary he lay some time concealed in Dublin, and after many hardships found refuge in Switzerland. At her death he was appointed by Elizabeth a prebend of Canterbury, where he died. His fame as an author rests upon his *Scriptorum Illustrium Majoris Britanniae Catalogus*; or *An Account of the Lives of Eminent Writers of Britain*, commencing with Japhet the son of Noah, and ending with the year 1557. It is compiled from various writers, chiefly from the antiquary Leland. He was also the author of nineteen miracle plays, printed in 1558.

Balear'ic Crane (*Balearica pavonina*), a handsome species of crested crane inhabiting North-west Africa.

Balear'ic Islands, a group of five islands, south-east of Spain, including Majorca, Minorca, Iviza, and Formentera. The popular derivation of the ancient name *Baleares* (Gr. *ballein*, to throw) has reference to the repute of the inhabitants for their skill in slinging, in which they distinguished themselves both in the army of Hannibal and under the Romans, by whom the islands were annexed in 123 B.C. After being taken by the Vandals, under Genseric, and in the eighth century by the Moors, they were taken by James I., King of Arragon, 1220–34, and constituted a kingdom, which in 1375 was united to Spain. The islands now form a Spanish province, with an area of 1860 square miles, and 312,646 inhabitants. See separate articles.

Baleen', whale-bone in the rough or natural state.

Bale-fire (A. Saxon *bæl*, a great fire), in its older and strict meaning any great fire kindled in the open air, or in a special sense the fire of a funeral pile. It has frequently been used as synonymous with beacon-fire, or a fire kindled as a signal, Sir Walter Scott having apparently been the first to employ it in this sense; and it has at various times, with even less reason, been confounded with 'bale' in the sense of evil or fatal.

Balen (bä'len), HENDRIK VAN, painter, born at Antwerp 1560, died 1632. His works, chiefly classical, religious, and allegorical—some of them executed in partnership with Breughel—are to be found in most of the European galleries. He was the first master of Van Dyck and Snyders. Three of his sons also followed the art, but the best of them, John van Oalen (1611–54), was inferior to his father.

Bales, PETER, a famous calligrapher, born 1547, died about 1610. His skill in micrography is referred to by Holinshed and Evelyn. He was one of the early inventors of shorthand, and is said to have been employed to imitate signatures by Secretary Walsingham.

Balfe (balf), MICHAEL WILLIAM, composer, was born in Dublin 15th May, 1808. In his seventh year he performed in public on the violin, and at sixteen took the part of the Wicked Huntsman in *Der Freischütz* at Drury Lane. In 1825 he went to Italy, wrote the music for a ballet *La Peyrouse* for the Scala at Milan, and in the following year sang at the *Théâtre-Italien*, Paris, with moderate success. He returned to Italy, and at Palermo was given his first opera, *I Rivali* (1829). For five years he continued singing and composing operas for the Italian stage. In 1835 he came to England, and his *Siege of Rochelle*, received with favour at Drury Lane, was followed by the *Maid of Artois* (1836), *Joan of Arc* (1837), *Falstaff* (1838), *Keolanthé* (1841), *Bohemian Girl* (1843), *Quatre Fils d'Aymon* (1844), *Bondman* (1846), *Maid of Honour* (1847), *Sicilian Bride* (1852), *Rose of Castile* (1857), *Satanella* (1858), *Blanche de Nevers* (1860), &c. The composer died 20th October, 1870. His posthumous opera, *The Talisman*, was first performed in London in June, 1874. His operas are melodious and many of the airs are excellent.

Balfour (balf'ur), SIR ANDREW, Bart., a Scottish botanist and physician, born in

Fifeshire in 1630. After completing his studies at St. Andrews and London, and travelling on the Continent, he settled at Edinburgh, where he planned, with Sir Robert Sibbald, the Royal College of Physicians, and was elected its first president. Shortly before his death he laid the foundation of a hospital in Edinburgh, which though at first narrow and confined, expanded into the Royal Infirmary. Sir Andrew died in 1694. His familiar letters were published in 1700.

Balfour, FRANCIS MAITLAND, an embryologist, born in 1851, studied at Harrow and Trinity College, Cambridge. Articles on his special study gained him a high reputation while still an undergraduate, and after further work at Naples he published in 1874, in conjunction with Dr. M. Foster, the *Elements of Embryology*, a valuable contribution to the literature of biology. He was elected a fellow of his college, fellow and member of council of the Royal Society, and in 1881 professor of animal morphology at Cambridge. The promise of his chief work *Comparative Embryology* (1880–81) was unfulfilled, as in the latter year he was killed by a fall on Mont Blanc.

Balfour, SIR JAMES, a Scottish lawyer and public character of the sixteenth century, was a native of Fifeshire. In youth, for his share in the conspiracy against Cardinal Beaton, he was condemned with Knox to the galleys; but after his escape with the rest in 1550 he found it to his interest to change his opinions, and latterly he was appointed, through the favour of Queen Mary, Lord of Session, and member of the privy-council. In 1567 he was appointed governor of Edinburgh Castle, but had no scruple in surrendering it to Murray, who made him president of the Court of Session. In 1570 he was charged with a share in the murder of Darnley, but got off by bribery. He was latterly instrumental in compassing the death of Regent Morton by the production of a deed signed by him and bearing on the Darnley murder. His own death took place shortly after in 1583. The *Practicks of Scots Law*, attributed to him, continued to be used and consulted in manuscript for nearly a century until it was supplanted by the *Institutes of Lord Stair*.

Balfour, JOHN HUTTON, a distinguished botanist, born 1808, died 1884. He graduated at Edinburgh University in arts and in medicine; in 1841–45 was professor of botany in Glasgow University; and in the

latter year removed to Edinburgh to occupy a similar post, resigning his chair in 1879. He wrote valuable botanical text-books, including *Elements*, *Outlines*, *Manual*, and *Class-book*, besides various other works.

Balfroosh', or **BARFURUSH'**, a town, Persia, province of Mazanderan, about twelve miles from the Caspian, a great emporium of the trade between Persia and Russia. Pop. estimated 50,000.

Ba'li, an island of the Indian Archipelago east of Java, belonging to Holland; greatest length, 85, greatest breadth, 55 miles; area, about 2260 square miles. It consists chiefly of a series of volcanic mountains, of which the loftiest, Agoong (11,326 feet), became active in 1843 after a long period of quiescence. Principal products, rice, cocoa, coffee, indigo, cotton, &c. The people are akin to those of Java and are mostly Brahmans in religion. It is divided into eight provinces under native rajahs, and forms one colony with Lombok, the united pop. being 863,725, of whom 300,000 may belong to Bali.

Bal'iol, or **BALLIOL**, **JOHN DE**, of Barnard Castle, Northumberland, father of king John Baliol, a great English (or Norman) baron in the reign of Henry III., to whose cause he strongly attached himself in his struggles with the barons. In 1263 he laid the foundation of Balliol College, Oxford, which was completed by his widow Devorguila or Devorgilla. She was daughter and co-heiress of Allan of Galloway, a great baron of Scotland, by Margaret, eldest daughter of David, Earl of Huntingdon, brother of William the Lion. It was on the strength of this genealogy that his son John Baliol became temporary King of Scotland. He died 1269.

Bal'iol, or **BALLIOL**, **JOHN**, King of Scotland; born about 1249, died 1315. On the death of Margaret, the Maiden of Norway and grandchild of Alexander III., Baliol claimed the vacant throne by virtue of his descent from David, Earl of Huntingdon, brother to William the Lion, King of Scotland (see above art.). Robert Bruce (grandfather of the king) opposed Baliol; but Edward I.'s decision was in favour of Baliol, who did homage to him for the kingdom, Nov. 20, 1292. Irritated by Edward's harsh exercise of authority, Baliol concluded a treaty with France, then at war with England; but after the defeat at Dunbar he surrendered his crown into the hands of the English monarch. He was sent with his son to the Tower, but, by the intercession of

the pope in 1297, obtained liberty to retire to his Norman estates, where he died.—His son, **EDWARD**, in 1332 landed in Fife with an armed force, and having defeated a large army under the regent Mar (who was killed), got himself crowned king, but was driven out in three months.

Balis'ta, or **BALLIS'TA**, a machine used in military operations by the ancients for hurling heavy missiles, thus serving in some degree the purpose of the modern cannon. The motive power appears to have been obtained by the torsion of ropes, fibres, catgut, or hair. They are said to have sometimes had an effective range of a quarter of a mile, and to have thrown stones weighing as much as 300 lbs. The balistæ differed from the *catapultæ*, in that the latter were used for throwing darts.

Balis'tidæ. See *Trigger-fishes*.

Balize (ba-lēz'). See *Belize*.

Bal'kan (anc. *Hæmus*), a rugged chain of mountains extending from Cape Emineb, on the Black Sea, in Eastern Roumelia, westwards to the borders of Servia, though the name is sometimes used to include the whole mountain system from the Black Sea to the Adriatic, the region south of Austria and Russia, or south of the Danube and Save, forming the Balkan Peninsula. The range, which is over 200 miles in length, forms the water-shed between the streams flowing northward into the Danube and those flowing southward to the Ægean, the chief of the latter being the Maritza. The average height is not more than 5000 ft., but the highest point, T'chat-al-dagh, is 8340 ft. As a political boundary it divides Bulgaria from Eastern Roumelia. It is considered the natural bulwark of Turkey against enemies on its European frontiers. Yet in the Russo-Turkish war of 1877–78 the Russian troops managed to cross it without great difficulty, though they had to encounter a stubborn resistance at the Shipka Pass, where a Turkish army of 32,000 men ultimately surrendered to them.

Balkan Free States, Bulgaria, Eastern Roumelia, Roumania, and Servia.

Balkash', or **BALKHASH** (bäl-hâsh'), a salt lake in Russian Central Asia, surrounded by steppes and plains; length about 330 miles, area 8500 sq. miles, depth nowhere more than 80 feet; formerly of much greater area and gradually growing smaller; receives the Ili and other smaller streams.

Balkh (bâlk or bâlh), a city in the north of Afghanistan, in Afghan Turkestan,

at one time the emporium of the trade between India, China, and Western Asia. It was long the centre of Zoroastrianism and was also an important Buddhist centre. In 1220 it was sacked by Genghis Khan, and again by Timur in the fourteenth century. The remains of the ancient city extend for miles. The town is now merely a village, but a new town has risen up an hour's journey north of the old, the residence of the Afghan governor, with a pop. of about 20,000. The district, which formed a portion of ancient Bactria, lies between the Oxus and the Hindu-Kush, with Badakshan to the east and the desert to the west. In the vicinity of the Oxus, where there are facilities for irrigation, the soil is rich and productive, and there are many populous villages.

Bal'kis, the Arabian name of the Queen of Sheba who visited Solomon. She is the central figure of innumerable Eastern legends and tales.

Ball, GAME OF. Ball-playing was practised by the ancients, and old and young amused themselves with it. The Phæacian damsels are represented in the Odyssey as playing it to the sound of music; and Horace represents Mæcenas as amusing himself thus in a journey. In the Greek gymnasia, the Roman baths, and in many Roman villas, a *spharisterium* (a place appropriated for playing ball) was to be found; the games played being similar to those indulged at the present day. In the middle ages the sport continued very popular both as an indoor and outdoor exercise, and was a favourite court pastime until about the end of the eighteenth century. In England football and tennis are mentioned at an early date, and a favourite game prior to the English revolution was one in which a *mallet* was used, hence the name *pall-mall* (It. *palla*, L. *pila*, a ball) for the game and the place where it was played. The most popular modern forms are cricket, base-ball, foot-ball, golf, lawn-tennis, fives, and polo.

Ball, JOHN, an itinerant preacher of the fourteenth century, excommunicated about 1367 for promulgating 'errors, schisms, and scandals against the Pope, archbishops, bishops, and clergy.' He was one of the most active promoters of the popular insurgent spirit which found vent under Wat Tyler in 1381, and the couplet

'When Adam delved and Eve span
Who was then the gentleman?'

is attributed to him.

Bal'lad, a term loosely applied to various poetic forms of the song type, but in its most definite sense a poem in which a short narrative is subjected to simple lyrical treatment. It was, as indicated by its name, which is related to the Italian *ballare* and O. French *baller*, to dance, originally a song accompanied by a dance. The ballad is probably one of the earliest forms of rhythmic poetic expression, constituting a species of epic in miniature, out of which by fusion and remoulding larger epics were sometimes shaped. As in the folk-tales, so in the ballads of different nations, the resemblances are sufficiently numerous and close to point to the conclusion that they have often had their first origin in the same primitive folk-lore or popular tales. But in any case, excepting a few modern literary ballads of a subtler kind, they have been the popular expression of the broad human emotions clustering about some strongly outlined incidents of war, love, crime, superstition, or death. It is probable that in the Homeric poems fragments of older ballads are embedded; but the earliest ballads, properly so called, of which we have record were the *ballistea* or dancing-songs of the Romans, of the kind sung in honour of the deeds of Aurelian in the Sarmatic war by a chorus of dancing boys. In their less specialized sense of lyric narratives, their early popularity among the Teutonic race is evidenced by the testimony of Tacitus, of the Gothic historian Jornandes, and the Lombard historian Paulus Diaconus; and many appear to have been written down by order of Charlemagne and used as a means of education. Of the ballads of this period, however, only a general conception can be formed from their traces in conglomerates like the *Nibelungenlied*; the more artificial productions of the *Minnesänger* and *Meistersänger* overlying the more popular ballad until the fifteenth century, when it sprang once more into vigorous life. A third German ballad period was initiated by Bürger under the inspiration of the revived interest in the subject shown in Great Britain and the publication of the *Percy Reliques*; and the movement was sustained by Herder, Schiller, Goethe, Heine, Uhland, and others. The earlier German work is, however, of inferior value to that of Scandinavia, where, though comparatively few manuscripts have survived, and those not more than three or four centuries old, a more perfect oral tradition has

rendered it possible to trace the original stock of the twelfth century.

Of the English and Scottish ballads anterior to the thirteenth century there are few traces beyond the indication that they were abundant, if indeed anything can be definitely asserted of them earlier than the fourteenth century. Among the oldest may be placed *The Little Gest of Robin Hood*, *Hugh of Lincoln*, *Sir Patrick Spens*, and *the Battle of Otterbourn*. In the fifteenth century specimens multiply rapidly: ballad-making became in the reign of Henry VIII. a fashionable amusement, the king himself setting the example; and though in the reign of Elizabeth ballads came into literary disrepute and ballad singers were brought under the law, yet there was no apparent check upon the rate of their production. Except perhaps in the north of England and south of Scotland, there was, however, a marked and increasing tendency to vulgarization as distinct from the preservation of popular qualities. The value of the better ballads was lost sight of in the flood of dull, rhythmless, and frequently scurrilous verse. The modern revival in Britain dates from the publication of *Ramsay's Evergreen and Tea-table Miscellany* (1724-27) and of the selection made by Bishop Percy from his seventeenth-century MSS. (1765), a revival not more important for its historic interest, than for the influence which it has exercised upon all subsequent poetry.

The threefold wave discernible in German, if not in British, ballad history, is equally to be traced in Spain, which alone among the Latinized countries of Europe has songs of equal age and merit with the British historic ballads. The principal difference between them is, that for the most part the Spanish romance is in trochaic, the British ballad in iambic metre. The ballads of the *Cid* date from about the end of the twelfth and beginning of the thirteenth century; and then followed an interval of more elaborate production, a revival of ballad interest in the sixteenth century, a new declension, and finally a modern and still persisting enthusiasm.

The French poetry of this kind never reached any high degree of perfection, the romance, farce, and lyric flourishing at the expense of the ballad proper. Of Italy much the same may be said, though Sicily has supplied a great store of ballads; and nearly all the Portuguese poetry of this kind

is to be traced to a Spanish origin. The Russians have lyrico-epic poems, of which some, in old Russian, are excellent, and the Serbians are still in the ballad-producing stage of civilization. Modern Greece has also its store of ballads, to which Madame Chenier called attention in the middle of last century. Both in Greece and Russia and in the Pyrenees the old habit of improvising song as an accompaniment to dance still exists.

Ballade (bal-äd'), the earlier and modern French spelling of *ballad*, but now limited in its use to a distinct verse-form introduced into English literature of late years from the French and chiefly used by writers of *vers-de-société*. It consists of three stanzas of eight lines each, with an *envoy* or closing stanza of four lines. The rhymes, which are not more than three, follow each other in the stanzas thus: a, b, a, b; b, c, b, c, and in the envoy, b, c, b, c; and the same line serves as a refrain to each of the stanzas and to the envoy. There are other varieties, but this may be regarded as the strictest, according to the precedent of Villon and Marot.

Bal'lantyne, JAMES, the printer of Sir W. Scott's works, born at Kelso 1772, died at Edinburgh 1833. Successively a solicitor and a printer in his native town, at Scott's suggestion he removed to Edinburgh, where the high perfection to which he had brought the art of printing, and his connection with Scott, secured him a large trade. The printing firm of James Ballantyne & Co. included Scott, James Ballantyne and his brother John (who died in 1821). For many years he conducted the *Edinburgh Weekly Journal*. His firm was involved in the bankruptcy of Constable & Co., by which Scott's fortunes were wrecked, but Ballantyne was continued by the creditors' trustee in the literary management of the printing-house. He survived Scott only about four months.

Ballarat', or BALLAARAT, an Australian town in Victoria, chief centre of the gold-mining industry of the colony, and next in importance to Melbourne, from which it is distant W.N.W. about sixty miles direct. It consists of two distinct municipalities, Ballarat West and Ballarat East, separated by the Yarrowee Creek, and has many handsome buildings, and all the institutions of a progressive and flourishing city, including hospital, mechanics' institute and library, free public library, Anglican and R. C. ca-

thedrals, &c. Gold was first discovered in 1851, and the extraordinary richness of the field soon attracted hosts of miners. The surface diggings having been exhausted the precious metal is now got from greater depths, and there are mines as deep as some coal-pits, the gold being obtained by crushing the auriferous quartz. The mines give employment to over 6000 men. There are also foundries, woollen mills, flour-mills, breweries and distilleries, &c. Population 1891, 46,033.

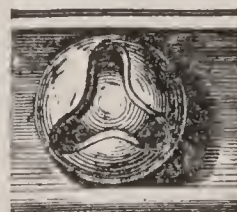
Ballast, a term applied (1) to heavy matter, as stone, sand, iron, or water placed in the bottom of a ship or other vessel to sink it in the water to such a depth as to enable it to carry sufficient sail without oversetting. (2) The sand placed in bags in the car of a balloon to steady it and to enable the aëronaut to lighten the balloon by throwing part of it out. (3) The material used to fill up the space between the rails on a railway in order to make it firm and solid.

Ball-cock, a kind of self-acting stop-cock opened and shut by means of a hollow

time, was a native of Lothian, and appears to have been born towards the close of the fifteenth century. He was in the service of James V. from the king's earliest years, at whose request he translated Boece's History, which had been published at Paris in 1526, the translation being printed in 1536. As a reward he was made archdeacon of Moray and a canon of Ross. He was a bitter opponent of the Reformation, and is said to have died at Rome in 1550.

Ballet (bal'ā), a species of dance, usually forming an interlude in theatrical performances, but principally confined to opera. Its object is to represent, by mimic movements and dances, actions, characters, sentiments, passions, and feelings, in which several dancers perform together. The ballet is an invention of modern times, though pantomimic dances were not unknown to the ancients. The dances frequently introduced into operas seldom deserve the name ballet, as they usually do not represent any action, but are destined only to give the dancers an opportunity of showing their skill, and the modern ballet in general, from an artistic point of view, is a very low-class entertainment.

Ball-flower, an architectural ornament resembling a ball placed in a circular flower, the three petals of which form a cup round it; usually inserted in a hollow moulding, and generally characteristic of the Decorated Gothic style of the fourteenth century.



Ball-flower.

Ballia, a town of India, in the North-western Provinces, on the Ganges, the administrative head-quarters of a district of same name. Pop. 15,320.

Ballina', a town and river-port, Ireland, county Mayo, on both banks of the Moy, about 5 miles above its mouth in Killala Bay, with a considerable local and also a little coasting and foreign trade. Pop. 5760.

Ballinasloe' (-slō), a town, Ireland, in Galway and Roscommon counties, 15 miles south-west of Athlone, on both sides of the Suck, noted for its cattle fair, from 5th till 9th October, the most important in Ireland. Pop. 5052.

Bal'liol College, Oxford, was founded about 1263 by John Balliol (or Baliol) of Barnard Castle, Durham, and Devorgilla, his wife (parents of John Balliol, king of

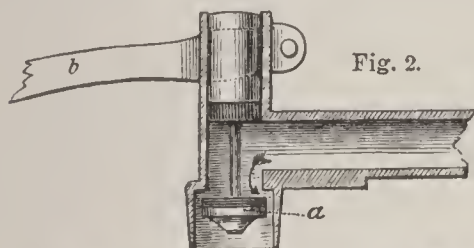


Fig. 2.

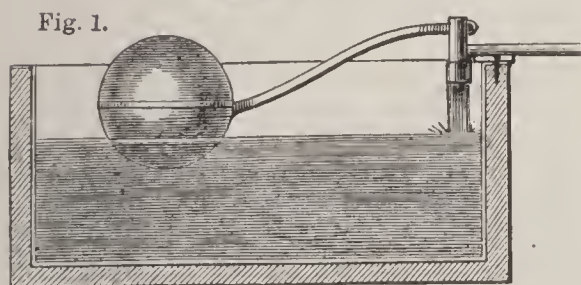


Fig. 1.

Fig. 1, Cistern with Ball-cock attached.
Fig. 2, Internal structure of Cock.

a, Valve shown open so as to admit water. *b*, Arm of the lever, which being raised shuts the valve.

sphere or ball of metal attached to the end of a lever connected with the cock. Such cocks are often employed to regulate the supply of water to cisterns. The ball floats on the water in the cistern by its buoyancy, and rises and sinks as the water rises and sinks, shutting off the water in the one case and letting it on in the other.

Bal'lentyne, or BELLENDEN, JOHN, a Scottish poet, and the translator of Boece's Latin History, and of the first five books of Livy into the vernacular language of his

Scotland). There are a large number of valuable scholarships and exhibitions, including the Snell exhibitions, fourteen in number, held by students from Glasgow University.

Ballista. See *Balista*.

Ballistic Pendulum, an apparatus for ascertaining the velocity of military projectiles, and consequently the force of fired gunpowder. A piece of ordnance is fired against bags of sand supported in a strong case or frame suspended so as to swing like a pendulum. The arc through which it vibrates is shown by an index, and the amount of vibration forms a measure of the force or velocity of the ball.

Balloon'. See *Aeronautics*.

Balloon-fish (*Tetraodon lineatus*), order Plectognathi, a curious tropical fish that can inflate itself so as to resemble a ball.

Ballot, VOTING BY, signifies literally voting by means of little balls (called by the French *ballottes*), usually of different colours, which are put into a box in such a manner as to enable the voter, if he chooses, to conceal for whom or for what he gives his suffrage. The method is adopted by most clubs in the election of their members—a white ball indicating assent, a black ball dissent. Hence, when an applicant is rejected, he is said to be *blackballed*. The term voting by ballot is also applied in a general way to any method of secret voting, as, for instance, when a person gives his vote by means of a ticket bearing the name of the candidate whom he wishes to support. In this sense vote by ballot is the mode adopted in electing the members of legislative assemblies in most countries, as well as the members of various other bodies. In ancient Greece and Rome the ballot was in common use. In Britain it had long been advocated in the election of members of Parliament and of municipal corporations, but it was only introduced by an act passed in 1872.

In the United States the ballot was in use in early colonial times, and was made compulsory in the constitutions of New Jersey, Pennsylvania, and all other States.

The Australian ballot system, originated within ten years in the British colonies, has recently been adopted by law in three-fourths of the United States. By a carefully contrived system of secluding each voter at the polls, and marking and folding the ballots, it claims to secure greater secrecy and honesty than any other method of voting.

Ballyme'na, a town, Ireland, county Antrim, 22 miles from Belfast, with a considerable trade in linens and linen yarns, the manufacture of which is carried on to a great extent. Pop. 8883.

Ballymo'ney, a town of Ireland, county Antrim, 38 miles N.W. of Belfast; linen, chemicals, tanning, and brewing. Pop. 3049.

Ballyshan'non, a small seaport of Ireland, county Donegal. Pop. 2840.

Balmaceda, JOSÉ MANUEL, Chilean statesman, born 1840; early distinguished as a political orator; advocated in Congress separation of church and state; as premier, in 1884, introduced civil marriage; elected President in 1886. A conflict with the Congressional party, provoked by his alleged cruelties and official dishonesty, and advocacy of the claim of Signor Vicuña as his legally elected successor, resulted in Balmaceda's overthrow and suicide, 1891.

Balm of Gilead, the exudation of a tree, *Balsamodendron gileadense*, nat. order Amyridaceæ, a native of Arabia Felix, and also obtained from the closely allied species *Bul-*



Balm of Gilead—*Balsamodendron gileadense*.

samodendron Opobalsānum. The leaves of the former tree yield when bruised a strong aromatic scent; and the balm of Gilead of the shops, or balsam of Mecca or of Syria, is obtained from it by making an incision in its trunk. It has a yellowish or greenish colour, a warm, bitterish, aromatic taste, and an acidulous fragrant smell. It is valued as an odoriferous unguent and cosmetic.

Balmer'ino, ARTHUR ELPHINSTONE, LORD, a Scottish Jacobite, born 1688, executed 1746. He took part in the Jacobite rebellion of 1715, and fought at Sheriffmuir.

Having joined the young Pretender in 1745, he was taken prisoner at Culloden, tried at Westminster, found guilty, and beheaded. His title was from Balmerino in Fife.

Balmor'al Castle, the Highland residence of Queen Victoria, beautifully situated on the s. bank of the Dee, in the county of, and 45 miles w. of Aberdeen. It stands in the midst of fine and varied mountain scenery, is built of granite in the Scottish baronial style, has been recently (1888) enlarged, and has a massive and imposing appearance. The estate, which is the queen's private property, extends to 25,000 acres, mostly deer forest.

Balnaves', HENRY, of Halhill, a Scottish reformer, was born at Kirkcaldy, educated at St. Andrews, and became a lord of session and a member of the Scottish parliament in 1538. He was one of the commissioners appointed in 1543 to treat of the proposed marriage between Edward VI. and Mary. In 1547 he was one of the prisoners taken in the castle of St. Andrews and exiled to France. Recalled in 1554, he busily engaged in the establishment of the reformed faith; assisted in revising the Book of Discipline, and accompanied Murray to England in connection with Darnley's murder. He died in 1579.

Balrampur. See *Bulrampur*.

Balsa, a kind of raft or float used on the coasts and rivers of Peru and other parts of



Balsa of Inflated Skins.

South America for fishing, for landing goods and passengers through a heavy surf, and for other purposes where buoyancy is chiefly wanted. It is formed generally of two inflated seal-skins, connected by a sort of platform on which the fisherman, passengers, or goods are placed.

Bal'sam, the common name of succulent plants of the genus *Impatiens*, family Balsaminaceæ, having beautiful irregular flowers, cultivated in gardens and green-houses. *Impatiens balsamina*, a native of the East

Indies, is a common cultivated species. The Balsaminaceæ are distinguished by their many-seeded fruit. See *Impatiens*.

Balsam, an aromatic, resinous substance, flowing spontaneously or by incision from certain plants. A great variety of substances pass under this name. But in chemistry the term is confined to such vegetable juices as consist of resins mixed with volatile oils, and yield the volatile oil on distillation. The resins are produced from the oils by oxidation. A balsam is thus intermediate between a volatile oil and a resin. It is soluble in alcohol and ether, and capable of yielding benzoic acid. The balsams are either liquid or more or less solid; as, for example, the balm of Gilead, and the balsams of copaiba, Peru, and Tolu. Benzoin, dragon's-blood, and storax are not true balsams, though sometimes called so. The balsams are used in perfumery, medicine, and the arts. See *Copaiba*, &c.—*Balsam of Gilead* or of *Mecca*, balm of Gilead (which see).—*Canada balsam*. See the art. *Canada Balsam*.

Balsam Fir, the balm of Gilead fir. See *Balm of Gilead*.

Balsa'mo, JOSEPH. See *Cagliostro*, Count.

Balsamoden'dron, a genus of trees or bushes, order Amyridaceæ, species of which yield such balsamic or resinous substances as balm of Gilead, bdellium, myrrh, &c.

Balta, a Russian town, gov. of Podolia, on the Kodema, an affluent of the Bug, 115 miles N.N.W. of Odessa. Pop. 18,450.

Baltic, BATTLE OF THE, the defeat of the Danish fleet at Copenhagen by Sir Hyde Parker and Nelson in 1801.

Baltic Provinces, a term commonly given to the Russian governments of Courland, Livonia, and Esthonia.

Baltic Sea, an inland sea or large gulf connected with the North Sea, washing the coasts of Denmark, Germany, Russia, and Sweden; nearly 900 miles long, extending to 200 broad; superficial extent, together with the Gulfs of Bothnia and Finland, 171,743 sq. miles. Its greatest depth is 126 fathoms; mean, 44 fathoms. A chain of islands separates the southern part from the northern, or Gulf of Bothnia. In the north-east the Gulf of Finland stretches far into Russia, and separates Finland from Esthonia; the Gulf of Riga washes the shores of the three Russian governments of Courland, Livonia, and Esthonia; while the Gulf of Danzig is an inlet on the Prussian coast. The water of the Baltic is colder and clearer than that

of the ocean: it contains a smaller proportion of salt, and the ice obstructs the navigation three or four months in the year. Among the rivers that enter it are the Neva, Dwina, Oder, Vistula and Niemen. Islands: Samsøe, Moen, Bornholm, Langeland, Laa-

canal large enough for men-of-war has been completed from the Elbe near its mouth and ending in Kiel Bay.

Bal'timore, a city and port in Maryland, U. States, finely situated on the N. side of the Patapsco, 14 miles above Chesapeake Bay. Baltimore takes its name from Lord Baltimore, the founder of Maryland; it was first laid out as a town in 1729; and was erected into a city in 1797. It is well built, chiefly of brick, and is known as the 'monumental city,' from the public monuments which adorn it, the principal being the Washington monument. Among its buildings are the city-hall, built in Renaissance style, of white marble, with a tower and dome rising 240 feet; the Peabody Institute, containing a library, art gallery, &c.; the Maryland Institute; the custom-house; the post-office; the United States court-house and jail, the Johns Hopkins hospital, the Roman Catholic cathedral, &c. The chief educational institution, now one of the most important in the States, is the Johns Hopkins University, endowed with 3,500,000 dols. by its founder (whose name it bears). The University of Maryland is one of the oldest medical schools in the U. S., established in 1812. Industries; ship-building; manufactures of iron, wool, cotton, pottery, &c.; sugar-refining, distilling, tanning, the making of agricultural implements, canning oysters and fruits, &c. As a flour market Baltimore is an important centre; and it does an immense trade in exporting tobacco and other products. The harbour is very extensive, and has lately been much improved. Pop. 1890, 434,439.

Baltimore, **GEORGE CALVERT**, LORD, born in Yorkshire about 1580; died in London, 1632. He was for some time secretary of state to James I., but this post he resigned in 1624 in consequence of having become a Roman Catholic. Notwithstanding this he retained the confidence of the king, who in 1625 raised him to the Irish peerage, his title being from Baltimore, a fishing village of Cork. He had previously obtained a grant of land in Newfoundland, but as this colony was much exposed to the attacks of the French he left it, and obtained another patent for Maryland. He died before the charter was completed, and it was granted to his son Cecil, who deputed the governorship to his brother Leonard (1606-47).

Baltimore Bird, an American bird, the *Icterus Baltimorii*, family Icteridæ, nearly allied to the Sturnidæ, or starlings. It is a



land, which belong to Denmark (besides Zealand and Funen); Gottland and Oeland, belonging to Sweden; Rügen, belonging to Prussia; the Aland Islands, Dagoe, and Oesel, belonging to Russia. The Sound, the Great and the Little Belt lead from the Kattegat into the Baltic. The Baltic and North Sea are connected by means of the Eider and a canal from it to the neighbourhood of Kiel, and the construction of a

migratory bird, and is known also by the names of 'golden robin,' 'hang-bird,' and 'fire-bird.' It is about 7 inches long; the head and upper parts are black; the under parts of a brilliant orange hue. It builds a pouch-like nest, very skilfully constructed of threads deftly interwoven, suspended from a forked branch and shaded by overhanging leaves. It feeds on insects, caterpillars, beetles, &c. Its song is a clear, mellow whistle.

Baluchistan (ba-lö'chi-stän), a country in Asia, the coast of which is continuous



Baluchis on the Look-out.

with the north-western seaboard of India, bounded on the north by Afghanistan, on the west by Persia, on the south by the Arabian Sea, and on the east by Sind. It has an area of about 160,000 sq. miles, and a population estimated at 400,000. The general surface of the country is rugged and mountainous, with some extensive intervals of barren sandy deserts, and there is a general deficiency of water. The country is almost entirely occupied by pastoral tribes under semi-independent sirdars or chiefs. The inhabitants are divided into two great branches, the Baluchis and Bra-

hais, differing in their language, figure, and manners. The Baluchi language resembles the modern Persian, the Brahui presents many points of agreement with the Dravidian languages of India. The Baluchis in general have tall figures, long visages, and prominent features; the Brahuais, on the contrary, have short, thick bones, with round faces and flat lineaments, with hair and beards frequently brown. Both races are zealous Mohammedans, hospitable, brave, and capable of enduring much fatigue. The Khan of Khelat is nominal ruler of the whole land, and in 1877 concluded a treaty with Britain, in virtue of which he has become a feudatory of the Empress of India. The right had already been secured of occupying at pleasure the mountain passes between Khelat and Afghanistan; but the new treaty places the whole country at the disposal of the British government for all military and strategical purposes. Quetta, a town in the north-east, occupying an important position, has been absolutely annexed.

Bal'uster, a small column or pilaster, of various forms and dimensions, often adorned with mouldings, used for balustrades.

Balustrade, a range of balusters, together with the cornice or coping which they support, used as a parapet for bridges or the roofs of buildings, or as a mere termination to a structure; also serving as a fence or inclosure for altars, balconies, terraces, staircases, &c.

Baluze (bâ-lüz), ÉTIENNE, French historian and miscellaneous writer, born 1630, died 1718. For more than thirty years he was librarian to M. de Colbert, and was appointed professor of canon law in the royal college, but displeasing Louis XIV. with his *Histoire générale de la maison d'Auvergne*, he was thrown into prison and his property confiscated. He recovered his liberty in 1713, but did not regain his position. He left some 1500 MSS. in the national library of Paris, besides forty-five printed works, including *Regum Francorum Capitularia*, 2 vols., and *Miscellanea*, 7 vols.

Balzac (bâl-zák), HONORÉ DE, a celebrated French novelist, was born at Tours in 1799, died 1850. Before completing his twenty-fourth year he had published a number of novels under various *noms de plume*, but the success attending all was very indifferent; and it was not till 1829, by the publication of *Le Dernier Chouan*, a tale of La

Vendée, and the first novel to which Balzac appended his name, that the attention of the public was diverted to the extraordinary genius of the author. A still greater popularity attended his *Physiologie de Mariage*, a work full of piquant and caustic observations on human nature. He wrote a large number of novels, all marked by a singular knowledge of human nature and distinct delineation of character, but apt to be marred by exaggeration. Among his best-known works are: *Scènes de la Vie de Province*; *Scènes de la Vie Parisienne*; *Le Père Goriot*; *Eugénie Grandet*; and *Le Médecin de Campagne* (The Country Doctor). The publication of this last, 1835, led to a correspondence between Balzac and the Countess Eveline de Hanska (the "Polish Lady" to whom he dedicated "Modeste Mignon," 1844), and whom he married fifteen years later. Many so-called "complete" editions of his works have been published, but it was not until 1897-98 that a really complete translation into English of his books was accomplished. America has the honor of this achievement, it being published in excellent style in Philadelphia by The Gebbie Publishing Company.

Balzac, JEAN LOUIS GUEZ, DE, SEIGNEUR, French writer, born at Angoulême in 1597; died Feb. 15, 1654. Admitted into the Academy 1634. A powerful rhetorician and a terse writer of prose. His *Letters*, *Prince*, *Socrate Chrétien*, *Entretiens* and *Aristippe* are the best known of his works.

Bamba, a district of the Congo, w. coast of Africa, lying to the south of the river Ambriz. It is thickly populated, and is rich in gold, silver, copper, salt, &c.

Bambar'ra, a negro kingdom of Central Africa, on the Joliba or Upper Niger, first visited by Mungo Park. The country is generally very fertile, producing wheat, rice, maize, yams, &c. The inhabitants belong to the Mandingo race, and are partly Mohammedans. Excellent cotton cloth is made. The capital is Sego. Pop. estimated at 2,000,000.

Bam'berg, a town of Germany, Bavaria, charmingly situated on several hills, on the navigable river Regnitz, some 3 miles from its mouth in the Main. Pop. 1890, 35,815.

Bambino (bām-bē'nō; Ital., an infant), the figure of our Saviour represented as an infant in swaddling-clothes. The *Santissimo Bambino* in the church of Ara Caeli at Rome, a richly decorated figure carved in wood, is

believed to have a miraculous virtue in curing diseases. Bambinos are set up for the adoration of the faithful in many places in Catholic countries.

Bambocciades (bam-boch-ādz'), pictures, generally grotesque, of common, rustic, or low life, such as those of Peter Van Laar, a Dutch painter of the 17th century, who on account of his deformity was called *Bamboccio* (cripple). Teniers is the great master of this style.

Bamboo, the common name of the arborescent grasses belonging to the genus *Bambusa*. There are many species, belonging to the warmer parts of Asia, Africa, and



1, Bamboo (*B. arundinacea*), showing its mode of growth.
2, Flowers, leaves, and stem on a larger scale.

America, and growing from a few feet to as much as 100, requiring much moisture to thrive properly. The best-known species is *B. arundinacea*, common in tropical and sub-tropical regions. From the creeping underground rhizome, which is long, thick, and jointed, spring several round jointed stalks, which send out from their joints several shoots, the stalks also being armed at their joints with one or two sharp rigid spines. The oval leaves, 8 or 9 inches long, are placed on short footstalks. The flowers grow in large panicles from the joints of the stalk. Some stems grow to 8 or 10 inches in diameter, and are so hard and durable as to be used for building purposes. The smaller stalks are used for walking-

sticks, flutes, &c.; and indeed the plant is used for innumerable purposes in the East Indies, China, and other Eastern countries. Cottages are almost wholly made of it; also, bridges, boxes, water-pipes, ladders, fences, bows and arrows, spears, baskets, mats, paper, masts for boats, &c. The young shoots are pickled and eaten (see *Atchar*), or otherwise used as food; the seeds of some species are also eaten. The substance called *tabasheer* is a siliceous deposit that gathers at the internodes of the stems. The bamboo is imported into Europe and America as a paper material as well as for other purposes.

Bambook', a country in Western Africa between the Falémé and Senegal rivers, about 140 miles in length, by 80 to 100 in breadth. It is on the whole hilly and somewhat rugged. The valleys and plains are remarkably fertile. The natives are Mandingoes, mostly professed Mohammedans ruled by independent chieftains, most of whom acknowledge the supremacy of France. Gold and ivory are exchanged for European goods.

Bambook-butter, shea-butter.

Bam'borough Castle, an ancient English castle on the coast of Northumberland, formerly with connected estate the property of the Forsters, and forfeited to the crown in 1715, both being purchased by Lord Crewe, Bishop of Durham, and bequeathed by him for charitable purposes.

Bambu'sa. See *Bamboo*.

Bam'ian, a valley and pass of Afghanistan, the latter at an elevation of 8496 feet, the only known pass over the Hindu Kush for artillery and heavy transport. The valley is one of the chief centres of Buddhist worship, and contains two remarkable colossal statues and other ancient monuments.

Bamo. See *Bhamo*.

Bampton Lectures, a course of lectures established in 1751 by John Bampton, canon of Salisbury, who bequeathed certain property to the University of Oxford for the endowment of eight divinity lectures to be annually delivered. The subjects prescribed are mainly connected with the evidences of Christianity, and the lecturer must have taken the degree of M.A. at Oxford or Cambridge. The first course of lectures was delivered in 1780, and they have been delivered every year since, with the exceptions of 1834, 1835, and 1841. Among the more remarkable lectures were those by Dr. White in 1784, by Dr. Mant in 1812, by Reginald Heber in 1815, Whately in 1822,

Milman in 1827, Dr. Hampden in 1832, Mr. Mansel in 1858, and Canon Liddon in 1866. A similar course of lectures, the Hulsean, is annually delivered at Cambridge.

Ban, in political law, is equivalent to excommunication in ecclesiastical. In Teutonic history the *ban* was an edict of interdiction or proscription: thus, to put a prince under the ban of the empire was to divest him of his dignities, and to interdict all intercourse and all offices of humanity with the offender. Sometimes whole cities have been put under the *ban*, that is deprived of their rights and privileges.

Ban, anciently, a title given to the military chiefs who guarded the eastern marches of Hungary, now the title of the governor of Croatia and Slavonia, a division of the kingdom of Hungary. A province over which a ban is placed is called *banat*.

Bana'na, a plant of the genus *Musa*, nat. order Musaceæ, being *M. sapientum*, while the plantain is *M. paradisiaca*. It is originally indigenous to the East Indies, and an herbaceous plant with an underground stem. The apparent stem, which is sometimes as high as 30 feet, is formed of the closely compacted sheaths of the leaves. The leaves are 6 to 10 feet long and 1 or more broad, with a strong midrib, from which the veins are given off at right angles; they are used for thatch, basket-making, &c., besides yielding a useful fibre. The spikes of the flowers grow nearly 4 feet long, in bunches, covered with purple-coloured bracts. The fruit is 4 to 10 or 12 inches long, and 1 inch or more in diameter; it grows in large bunches, weighing often from 40 to 80 lbs. The pulp is soft and of a luscious taste; when ripe it is eaten raw or fried in slices. The banana is cultivated in tropical and sub-tropical countries, and is an important article of food. Manilla hemp is the product of a species of banana.

Bana'na, an African port, belonging to the Congo Free State, situated at the mouth of the river Congo.

Banana-bird, a pretty insessorial bird (*Icterus leucopteryx*), a native of the West Indies and the warmer parts of America. It is a lively bird, easily domesticated, tawny and black in colour, with white bars upon the wings.

Banat. See *Ban*.

Ban'bridge, a town of Ireland, county Down, 22 miles s.w. of Belfast, on the Bann. The manufacture of linen is carried on to

a great extent in town and neighbourhood. Pop. 6000.

Banbury (ban'be-ri), a town of England, in Oxford, long celebrated for its cheese, its cakes, and its ale; a parl. bor. till 1885, and now giving name to a parl. div. of the county. Pop. 3600.

Banca, an island belonging to the Dutch East Indies, between Sumatra and Borneo, 130 miles long, with a width varying from 10 to 30; pop. 1890, 80,921, a considerable proportion being Chinese. It is celebrated for its excellent tin, of which the annual yield is above 4000 tons; but it produces nothing else of any importance.

Banco, in commerce, a term employed to designate the money in which the banks of some countries keep or kept their accounts, in contradistinction to the current money of the place, which might vary in value or consist of light and foreign coins. The term was applied to the Hamburg bank accounts before the adoption (in 1873) of the new German coinage. The mark *banco* had a value of 1s. 5½d.; but there was no corresponding coin. See *Bank*.

Ban'croft, GEORGE, American historian, born near Worcester, Mass., in 1800. He was educated at Harvard and in Germany, where he made the acquaintance of many literary men of note. In 1824 he published a translation of Heeren's *Politics of Ancient Greece*, and a small volume of poems, and was also meditating and collecting materials for a history of the United States. Between 1834 and 1840 three volumes of his history were published. In 1845 he was appointed secretary of the navy, and effected many reforms and improvements in that department. He was American ambassador to England from 1846 to 1849, when the University of Oxford conferred on him the honorary degree of D.C.L. He took the opportunity while in Europe to perfect his collections on American history. He returned to New York in 1849, and began to prepare for the press the fourth and fifth volumes of his history, which appeared in 1852. The sixth appeared in 1854, the seventh in 1858, the eighth soon after, but the ninth did not appear till 1866. From 1867 to 1874 he was minister plenipotentiary at the court of Berlin. The tenth and last volume of his great work appeared in 1874. An additional section appeared first as a separate work in 1882: *History of the Formation of the Constitution of the U. States*, and the whole came out in 6 vols. in 1884-5.

Mr. Bancroft settled in Washington on returning from Germany in 1875, and died there in a serene old age, Jan. 17, 1891, in his 91st year.

Ban'croft, RICHARD, born in Lancashire 1544, died 1610. studied at Cambridge, entered the church, and rose rapidly during the reign of Elizabeth till he obtained the see of London in 1597. James I. made him Archbishop of Canterbury on the death of Whitgift. He suppressed the Puritans mercilessly, and they in return never ceased to abuse him.

Banda, a town and district of the North-Western Provinces of India. The town stands on a plain on the right bank of the Ken river, 95 miles s.w. from Allahabad, and is a considerable cotton-mart. Pop. 28,974.—Area of district 3061 sq. miles; pop. 698,608.

Bandage, a surgical wrapper of some kind applied to a limb or other portion of the body to keep parts in position, exert a pressure, or for other purpose. To be able to apply a bandage suitably in the case of an accident is a highly useful accomplishment, which, through the teaching of ambulance surgery now so common, may be easily acquired.

Banda Islands, a group belonging to Holland, Indian Archipelago, south of Ceram, Great Banda, the largest, being 12 miles long by 2 broad. They are beautiful islands, of volcanic origin, yielding quantities of nutmeg. Goenong Api, or Fire Mountain, is a cone-shaped volcano which rises 2320 feet above the sea. Pop. 6700.

Bandajan', a pass over a range of the Himalayas, Kashmir state, 14,854 feet above sea-level.

Bandan'na, a variety of silk handkerchief having a uniformly dyed ground, usually of bright red or blue, ornamented with white or yellow circular, lozenge-shaped, or other simple figures produced by discharging the ground colour.

Banda Oriental. See *Uruguay*.

Bandel'lo, MATTEO, an Italian writer of *novelle* or tales, born about 1480, died about 1562. He was, in his youth, a Dominican monk, and having been banished from Italy as a partisan of the French, Henry II. of France gave him in 1550 the bishopric of Agen. He left the administration of his diocese to the Bishop of Grasse, and employed himself, at the advanced age of seventy, in the completion of his *novelle*. He also wrote poetry, but his fame rests on

his *novelle*, which are in the style of Boccaccio, and have been made use of by Shakspeare, Massinger, and Beaumont and Fletcher.

Bande Noire (bānd nwär), the name given when the revolution in France had entailed the confiscation of much ecclesiastical property, also many castles and residences of the emigrant and resident nobility, to a number of speculators who bought up the edifices, &c., in order to demolish them and turn their materials to profit. They were so called on account of their disregard of sacred property, of art, antiquity, and historical associations.

Band-fish, the popular name of fishes of the genus *Cepōla*, from their long, flat, thin bodies. *C. rubescens*, a very fragile creature, is sometimes cast up on British shores. Also called *Snake-fish*, *Ribbon-fish*.

Ban'dicoot, the *Mus gigantēus*, the largest known species of rat, attaining the weight of 2 or 3 lbs., and the length, including the tail, of 24 to 30 inches. It is a native of India, and is very abundant in Ceylon. Its flesh is said to be delicate and to resemble young pork, and is a favourite article of diet with the coolies. It is destructive to rice fields and gardens.—The name is also given to a family of Australian marsupials. The most common species (*Peramēles nasūta*), the long-nosed bandicoot, measures about 1½ foot from the tip of the snout to the origin of the tail, and in general appearance bears a considerable resemblance to a large overgrown rat.

Bandinel'li, BACCIO, Italian sculptor, born at Florence 1493, died there 1560. He was jealous of and strove to rival Michael Angelo. Among his works are a Hercules and Cacus, the dead body of Christ held up by an angel, Adam and Eve, &c.

Ban'dit, Italian *bandito*, originally an exile, banished man, or outlaw, and hence, as persons outlawed frequently adopted the profession of brigand or highwayman, the word came to be synonymous with brigand, and is now applied to members of the organized gangs which infest some districts of Italy, Sicily, Spain, Greece, and Turkey.

Band of Hope, a name given to societies of young persons pledged to teetotalism.

Ban'doleer, a large leathern belt or baldrick, to which were attached a bag for balls and a number of pipes or cases of wood or metal covered with leather, each containing a charge of gunpowder. It was worn by ancient musketeers and hung from the left

shoulder under the right arm with the ball bag at the lower extremity, and the pipes suspended on either side. The name is sometimes given to the small cases themselves, now superseded by cartridges.

Ban'doline, a gummy perfumed substance used to impart gloss and stiffness to the hair.

Ban'don, a town, Ireland, co. Cork, on both sides of the Bandon. Pop. 3997.

Bands, a small article of clerical dress made of linen going round the neck and hanging down in front for a short distance in two pieces with square ends, supposed to be a relic of the amice.

Baneberry, *Actæa spicāta*, a European plant, order Ranunculaceæ, local in England, with a spike of white flowers and black, poisonous berries. Two American species are considered remedies for rattlesnake bite.

Banér (bā-nār'), JOHAN GUSTAFSSON, a Swedish general in the Thirty Years' war, born 1596, died 1641. He made his first campaigns in Poland and Russia, and accompanied Gustavus Adolphus, who held him in high esteem, to Germany. After the death of Gustavus in 1632 he had the chief command of the Swedish army, and in 1634 invaded Bohemia, defeated the Saxons at Wittstock, 24th September, 1636, and took Torgau. He ravaged Saxony again in 1639, gained another victory at Chemnitz, and in 1640 defeated Piccolomini. In January, 1641, he very nearly took Ratisbon by surprise.

Banff (bamf), county town of Banffshire, Scotland, a seaport on the Moray Firth at the mouth of the Deveron. It is well built, carries on some ship-building, and has a rope and sail work, a brewery, &c., with a fishing and shipping trade. Near the town are the County Lunatic Asylum, and Duff House, the seat of the Earl of Fife; on the east side of the Deveron is the town of Macduff, where an extensive fishing trade is carried on. Banff is one of the Elgin burghs, which together return a member to Parliament. Pop. of parl. burgh, which includes Macduff, 8841; Banff portion, 4255.—The county has an area of 439,219 acres. In the south it is mountainous; but the northern part is comparatively low and fertile; principal rivers, the Spey and Deveron; principal mountains, Cairngorm (4095 ft.) and Ben Macdhui (4296 ft.), on its southern boundary. Little wheat is raised, the principal crops being barley, oats, turnips, and

potatoes. Fishing is an important industry; as is also the distilling of whisky. Serpentine abounds in several places, especially at Portsoy, where it is known as 'Portsoy marble,' and Scotch topazes or cairngorm stones are found on the mountains in the south. Banffshire returns one member to Parliament. Pop. 1891, 64,167.

Bang. See *Bhang*.

Bangalore', a town of Hindustan, capital of Mysore, and giving its name to a considerable district in the east of Mysore state. The town stands on a healthy plateau 3000 feet above sea-level, has a total area of nearly 14 square miles, and is one of the pleasantest British stations in India. In the old town stands the fort, reconstructed by Hyder Ali in 1761, and taken by Lord Cornwallis in 1791. Under English administration the town has greatly prospered in recent times. There are manufactures of silks, cotton cloth, carpets, gold and silver lace, &c. Pop. 155,857. The Bangalore district has an area of nearly 3000 square miles, of which more than half represent cultivable land. Pop. 669,139.

Bangkok', or **BANKOK**, the capital of the Kingdom of Siam, extending for several miles on both sides of the Menam, which falls into the Gulf of Siam about 15 miles below. The inner city occupies an island surrounded with walls and bastions; and contains the palace of the king and other important buildings. The dwellings of the common people are of wood or bamboo often raised on piles; a large portion of the population, however, dwell in boats or wooden houses erected on bamboo rafts moored in the river, and forming a floating town. Temples are numerous and lavishly decorated. Houses in the European style are beginning to be erected, and among other advances recently made are the introduction of the telegraph and telephone, gas, fire-engines, and omnibuses. The trade, both inland and foreign, is very extensive, the exports consisting chiefly of rice, sugar, silk, cotton, tobacco, pepper, sesame, ivory, aromatic wood, cabinet woods, tin, hides, &c.; and the imports consisting chiefly of British cotton, woollen, and other goods. Pop. estimated at 500,000, of whom about a half are Chinese.

Bangles, ornamental rings worn upon the arms and ankles in India and Africa.

Ban'gor, a city of North Wales, in Caernarvonshire, picturesquely situated near the northern entrance of the Menai Strait. It

appears to have possessed a cathedral in the sixth century, though the present cathedral—the third—only dates from the reign of Henry VII. There is also a university college. Since the construction of the Menai Bridge, Bangor has risen into some importance as a popular resort; its principal trade is in the export of slates from the neighbouring quarries. Pop. 1891, 9892.

Ban'gor, a seaport town, Ireland, county Down, on the south side of Belfast Lough. Principal trade: cotton, linen, and embroideries. Pop. 3002.

Ban'gor, a port of the United States, in Maine, on the w. side of Penobscot River, a flourishing and pleasantly situated town, and one of the largest lumber depôts in the world. The river is navigable to the town for vessels of the largest size. Pop. 19,103.

Bango'rian Controversy, a controversy stirred up by a sermon preached before George I. in 1717 by Dr. Hoadly, bishop of Bangor, from the text 'My kingdom is not of this world,' in which the bishop contended in the most pronounced manner for the spiritual nature of Christ's kingdom. The controversy was carried on with great heat for many years, and resulted in an enormous collection of pamphlets.

Bangs'ring. See *Banxring*.

Bangweo'lo, LAKE, in South Africa, the southernmost of the great lake reservoirs of the Congo, discovered by Livingstone in 1868, an oval-shaped shallow sheet of water, said to be 150 miles in length along its greater axis from east to west, and about 75 miles in width, but its exact limits are uncertain.

Ban'ian, or **BAN'YAN**, an Indian trader or merchant, one engaged in commerce generally, but more particularly one of the great traders of Western India, as in the seaports of Bombay, Kurrachee, &c., who carry on a large trade by means of caravans with the interior of Asia, and with Africa by vessels. They form a class of the Vaisya caste, wear a peculiar dress, and are strict in the observance of fasts and in abstaining from the use of flesh. Hence—*Banian days*, days in which sailors in the navy had no flesh meat served out to them. *Banian days* are now abolished, but the term is still applied to days of poor fare.

Banian-tree. See *Banyan*.

Ba'nim, JOHN, an Irish novelist, dramatist, and poet, born in 1798, died 1842. His chief early work was a poem, *The Celt's Paradise* (1821). Having settled in

London, he made various contributions to magazines and to the stage; but his fame rests on his novels, particularly the *O'Hara Tales*, in which Irish life is admirably portrayed. In these, as in some of his other publications, his brother, Michael Banim (born 1796, died 1874), had an important share, if not an equal claim to praise.

Banishment. See *Exile*.

Ban'jarmassin, a district and town in the south-east of Borneo, under the government of the Dutch. The town is situated on an arm of the Banjar, about 14 miles above its mouth, in a marshy locality, the houses being built on piles, and many of them on rafts. Exports: pepper, benzoin, bezoar, ratans, dragon's-blood, birds'-nests, &c.; imports: rice, salt, sugar, opium, &c. Pop. 25,000 to 30,000.

Ban'jo (a negro corruption of *bandore*, It. *pandora*, from L. *pandoura*, a three-stringed instrument), the favourite musical instrument of the negroes of the Southern States of America. It is six-stringed, has a body like a tambourine and a neck like a guitar, and is played by stopping the strings with the fingers of the left hand and twitching or striking them with the fingers of the right. The upper or octave string, however, is never stopped.



Banjo.

Banjoemas (bân'yö-mäs), town in Java, near the centre of the island, well built and of commercial importance; it is 22 miles from the coast, and is the residence of a Dutch governor. Pop. 9000.

Bank, primarily an establishment for the deposit, custody, and repayment on demand, of money; and obtaining the bulk of its profits from the investment of sums thus derived and not in immediate demand. The term is a derivative of the *banco* or bench of the early Italian money dealers, being analogous in its origin to the terms *trapezitai* (*trapeza*, a bench or table) applied to the ancient Greek money-changers, and *mensarii* (*mensa*, a table) applied to the public bankers of Rome.

In respect of constitution there is a broad division of banks into public and private; public banks including such establishments as are under any special state or municipal control or patronage, or whose capital is in

the form of stock or shares which are bought and sold in the open market; private banks embracing those which are carried on by one or more individuals without special authority or charter and under the laws regulating ordinary trading companies. In respect of function three kinds of banks may be discriminated: (1) banks of deposit merely, receiving and returning money at the convenience of depositors; (2) banks of discount or loan, borrowing money on deposit and lending it in the discount of promissory notes, bills of exchange, and negotiable securities; (3) banks of circulation or issue, which give currency to promissory notes of their own, payable to bearer and serving as a medium of exchange within the sphere of their banking operations. The more highly organized banks discharge all three functions, but all modern banks unite the two first. For the successful working of a banking establishment certain resources other than the deposits are of course necessary, and the subscribed capital, that is the money paid up by shareholders on their shares and forming the substantial portion of their claim to public credit, is held upon a different footing to the sums received from depositors. It is usually considered that for sound banking this capital should not be traded with for the purpose of making gain in the same way as the monies deposited in the bank; and it is for the most part invested in government or other securities subject to little fluctuation in value and readily convertible into money. But in any case prudence demands that a *reserve* be kept sufficient to meet all probable requirements of customers in event of commercial crises or minor panics. The reserve of the banking department of the Bank of England is always in coin, or in notes against which an equivalent value of coin and bullion is lying in the issue department. In other English banks the reserve is usually kept partly in gold and partly in government stocks and Bank of England notes; but it sometimes lies as a deposit in the Bank of England. The working capital proper of a bank is constituted by monies on deposit, for which the bank may or may not pay interest; the advantages of security, of ease in the transmission of payments, &c., being regarded in the cases of banks little affected by competition as a sufficient return to the depositor. Thus the Bank of England pays no interest on deposits, while the contrary

practice has prevailed in Scotland since 1729.

Of the methods of making profit upon the money of depositors, one of the most common is to advance it in the discounting of bills of exchange not having long periods (seldom more than 3 months with the Bank of England) to run; the banker receiving the amounts of the bills from the acceptors when the bills arrive at maturity. Loans or advances are also often made by bankers upon exchequer bills or other government securities, on railway debentures or the stock of public companies of various kinds, as well as upon goods lying in public warehouses, the dock-warrant or certificate of ownership being transferred to the banker in security. In the case of a well-established credit they may be advanced upon notes of hand without other security. Money is less commonly advanced by bankers upon mortgages on land, in which the money loaned is almost invariably locked up for a number of years. To banks of issue a further source of profit is open in their note circulation, inasmuch as the bank is enabled to lend these notes, or promises to pay, as if they were so much money and to receive interest on the loan accordingly, as well as to make a profitable use of the money or property that may be received in exchange for its notes, so long as the latter remain in circulation. It is obvious, however, that this interest on its loaned notes may not run over a very extended period, in that the person to whom they are issued may at once return them to the bank to lie there as a deposit and so may actually draw interest on them from the bank of issue; or he may present them to be exchanged for coin, or by putting them at once into circulation may ensure a certain number speedily finding their way back through other hands or other banks to the establishment from which he received them. A considerable number of the notes issued will, however, be retained in circulation at the convenience of the public as a medium of exchange; and on this circulating portion a clear profit accrues. This rapid return of notes through other banks, &c., in exchange for portions of the reserve of the issuing bank, is one of the restraints upon an issue of notes in excess of the ability of the bank to meet them. In Britain a more obvious restraint upon an unlimited note issue, originating partly in a desire for greater security, partly in the belief that the note augmentation of the currency might lead to harmful

economic results in its influence upon prices, is to be found in the bank acts of 1844 and 1845, which impose upon banks of issue the necessity of keeping an equivalent in gold for all notes issued beyond a certain fixed amount. The wisdom of these legal restrictions, which are not uniform throughout the kingdom, and the desirability of the acquisition and control by the state of the whole business of issue, are still matters of debate.

In specific relation to his customer the banker occupies the position of debtor to creditor, holding money which the customer may demand at any time in whole or in part by means of a cheque payable at sight on presentation during banking hours. For the refusal to cash a cheque from the erroneous supposition that he has no funds of his customer's in his hands, or for misleading statements respecting the position in which the bank stands, the banker is legally responsible. Moreover, the law regards him as bound to know his customer's signature, and the loss falls upon him in event of his cashing a forged cheque. In their relations to the community, the chief services rendered by banks are the following:—By receiving deposits of money, and massing in sums efficient for extensive enterprises the smaller savings of individuals, they are the means of keeping fully and constantly employed a large portion of the capital of the community which, but for their agency, would be unproductive; they are the means by which the surplus capital of one part of a country is transferred to another where it may be advantageously employed in stimulating industry; they enable vast and numerous money transactions to be carried on without the intervention of coin or notes at all, thus obviating trouble, risk, and expense. The mechanism by which the last of these benefits is secured is to be found in perfection in the London Clearing House.

Although banking operations on a considerable scale appear to have been conducted by the ancients, modern banking must be regarded as having had an independent origin in the reviving civilization of the middle ages. In the twelfth century almost the whole trade of Europe was in the hands of the Italian cities, and it was in these that the need of bankers was first felt. The earliest public bank, that of Venice, established in 1171 and existing down to the dissolution of the republic in

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1797, was for some time a bank of deposit only, the government being responsible for the deposits, and the whole capital being in effect a public loan. In the early periods of the operations of this bank deposits could not be withdrawn, but the depositor had a credit at the bank to the amount deposited, this credit being transferable to another person in place of money payment. Subsequently deposits were allowed to be withdrawn, the original system proving inconvenient outside the Venetian boundaries. It was, however, less from the Bank of Venice than from the Florentine bankers of the 13th and 14th centuries that modern banking specially dates, the magnitude of their operations being indicated by the fact that between 1430 and 1433, 76 bankers of Florence issued on loan nearly 5,000,000 gold florins. The Bank of St. George at Genoa also furnished a striking chapter in financial history. The important Bank of Amsterdam, taken by Adam Smith as a type of the older banks, was established in 1609, and owed its origin to the fluctuation and uncertainty induced by the clipped and worn currency. The object of the institution (established under guarantee of the city) was to give a certain and unquestionable value to a bill on Amsterdam; and for this purpose the various coins were received in deposit at the bank at their real value in standard coin, less a small charge for recoinage and expense of management. For the amount deposited a credit was opened on the books of the bank, by the transfer of which payments could be made, this so-called *bank money* being of uniform value as representing money at the mint standard. It bore, therefore, an *agio* or premium above the worn coin currency, and it was legally compulsory to make all payments of 600 guilders and upwards in bank money. The deposits were supposed to remain in the coffers of the bank, but they were secretly traded with in the 18th century till the collapse of the bank in 1790. Banks of similar character were established at Nuremberg and other towns, the most important being the bank of Hamburg, founded in 1619. In England there was no corresponding institution, the London merchants being in the habit of lodging their money at the Mint in the Tower, until Charles I. appropriated the whole of it (£200,000) in 1640. Thenceforth they lodged it with the goldsmiths, who began to do banking business in a small way, encouraging deposits by

allowing interest (4*d.* a day) for their use, lending money for short periods, discounting bills, &c. The bank-note was first invented and issued in 1690 by the Bank of Sweden, founded by Palmstruck in 1688, and one of the most successful of banking establishments. About the same time the banks of England and Scotland began to take shape, opening up a new era in the financing of commerce and industry.

The Bank of England, the most important banking establishment in the world, was projected by William Paterson, who was afterwards the promoter of the disastrous Darien scheme. It was the first public bank in the United Kingdom, and was chartered in 1694 by an act which, among other things, secured certain recompenses to such persons as should advance the sum of £1,500,000 towards carrying on the war against France. Subscribers to the loan became, under the act, stockholders, to the amount of their respective subscriptions, in the capital stock of a corporation, denominated the *Governor and Company of the Bank of England*. The company thus formed, advanced to the government £1,200,000 at an interest of 8 per cent—the government making an additional bonus or allowance to the bank of £4000 annually for the management of this loan (which, in fact, constituted the capital of the bank), and for settling the interest and making transfers, &c., among the various stockholders. This bank, like that of Venice, was thus originally an engine of the government, and not a mere commercial establishment. Its capital has been added to from time to time, the original capital of £1,200,000 having increased to £14,553,000 in 1816, since which no further augmentation has taken place. There exists besides, however, a variable ‘rest’ of over £3,000,000. The charter of the bank was originally granted for eleven years certain, or till a year’s notice after August 1, 1705. It was subsequently renewed for various periods in 1697, 1708, 1713, 1742, 1764, 1781, 1800, 1833, and 1844, certain conditions which the bank had to fulfil being specified at each renewal. On this last occasion it was continued till twelve months’ notice from 1855. At the same time the issue department of the bank was established as distinct from the general banking department, the sole business intrusted to the former being the issue of notes. By this arrangement the bank was authorized to issue notes to the value of £14,000,000 upon

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securities specially set apart, the most important of the securities being the sum of £11,015,100 due to the bank by the government, together with so much of the coin and bullion then held by the bank as was not required by the banking department. The bank has since been permitted to increase its issue on securities to £15,750,000, but for every note that the issue department may issue beyond the total sum of £15,750,000 an equivalent amount of coin or bullion must be paid into the coffers of the bank. The Bank of England notes are, therefore, really equivalent to, and at any time convertible into gold, as it is in the

utmost degree improbable that any drain on the treasure in the bank will reduce the outstanding notes below £15,750,000. They are (like all English bank-notes) of the value of £5 and upwards, and are legal tender throughout England. Notes once issued by the bank and returned to it are not reissued but are destroyed—a system adopted in order to facilitate the keeping of an account of the numbers of the notes in circulation, and so prevent forgery.

In compliance also with the act of 1844 the bank is compelled to publish a weekly account, of which the following is a specimen:—

ISSUE DEPARTMENT: Week ending June 20, 1893.

Dr.						Cr.
Notes issued,	£36,343,275					Government debt, £11,015,100
						Other securities, 5,184,900
						Gold coin and bullion, 20,143,275
						Silver bullion,
	£36,343,275					£36,343,275

BANKING DEPARTMENT.

Dr.						Cr.
Proprietors' capital,	£14,553,000					Government securities, £16,753,391
Proprietors' rest,	3,097,282					Other securities, 19,468,751
Public deposits,	5,803,699					Notes, 12,363,885
Other deposits,	26,460,023					Coin, 1,505,887
Seven days' bills,	177,910					
	£50,091,914					£50,091,914

The total of the notes given out by the issue department is called the 'issue circulation,' the portion of it in the hands of the public being the 'active circulation,' and that still in the banking department being the 'note reserve.' This 'note reserve' represents really the amount of bullion in the issue department available for the use of the banking department. Of the other items in the account it may be noted that the proprietors' 'rest' is a varying surplus increased always by accumulated profits up to April 5th and October 10th, when the bank dividends are paid to the shareholders; and that the public deposits, which include sums lodged on account of the customs, inland revenue, &c., increase through revenue receipts until the dividend terms in January, April, July, and October. The other or private deposits comprise those of bankers, merchants, and other persons. An increase in these private deposits indicates an increase of monetary ease, while a decrease informs us that bankers, merchants, and traders have calls upon them for money. A better indication of the demand for money is furnished, however, by the advances on commercial securities, and it is by

this and the condition of the reserve that the bank rate of discount is regulated. When the reserve is high and the advances moderate the discount rate is low, and it is raised according as the reserve falls and advances are more in request, especially during an adverse foreign exchange and drain of gold. Gold is thus restrained from going abroad, and its influx into the country is encouraged. In addition to the profit which the bank may make by ordinary banking business, it receives an allowance for the management of the national debt, &c., at the rate of £300 per million on £6,000,000, and £150 per million on all debt above that sum. It also derives a profit from the foreign coin and bullion brought to it, for which it pays £3, 17s. 9d., or 1½d. per ounce less than the real value.

The management of the bank is in the hands of a governor, deputy-governor, and twenty-four directors, elected by stockholders who have held £500 of stock for six months previous to the election. A director is required to hold £2000, a deputy-governor £3000, and a governor £4000 of the stock. The court or board of directors meets every Thursday, when the weekly account is presented.

BANK.

The other English banks consist of numerous joint-stock and private banks in London and the provinces, many of the provincial establishments of both kinds having the right to issue notes. Private banks in London with not more than six partners have never been prevented from issuing notes, but they could not profitably compete with the Bank of England. The maximum issues of the provincial banks are limited to a certain amount, against which they are not compelled to hold gold in reserve, and they have no power to issue against specie in excess of the fixed circulation. Their actual issues are considerably below this amount. No union can take place between a joint-stock bank and a private bank, or between two joint-stock banks of issue, without one of them losing its issue. Their authorized circulation is about £6,000,000, but the actual circulation of these banks is now only about £3,500,000, distributed among about 100 private and about half that number of joint-stock banks. The notes of these banks are payable in Bank of England paper. The greater number of joint-stock banks are of limited liability, though their liability in respect of their notes is unlimited. Some of them have a number of branches. All the joint-stock banks allow interest on money deposited with them. The total paid-up capital and reserves of the English joint-stock banks is over £150,000,000.

In Scotland there are no private banks, the only banks in that portion of the United Kingdom being ten joint-stock banks of issue, and their branches. By the act of 1845 new banks of issue were prohibited, a monopoly being given to such establishments as existed in the year previous to 1st May, 1845. At the same time the issue of each was limited to the amount of its average circulation during that year, together with the specie held at the head-office. Any bank issuing notes in excess of this limit is supposed to hold an equivalent amount of gold. The aggregate authorized circulation is now £2,676,350; the average actual circulation is about £5,850,000. The Bank of Scotland, established by act of Parliament in 1695, had for its original capital only £100,000, increased to £200,000 in 1744; but it now has a capital of £1,250,000 paid up. It remained the only bank in Scotland till the Royal Bank of Scotland was established in 1727, with an original capital of £151,000, which has grown to £2,000,000. The

British Linen Company was incorporated in 1746, for the purpose of promoting the linen manufacture, but soon became a general banking company; capital, £1,000,000. These three banks claim to be by their charters banks of limited liability. All the other Scottish banks have been established within the present century. They are all incorporated by royal charter or act of Parliament, which enables them to sue and be sued as a corporation, and latterly they have all become banks of limited liability, except that their liability is not to be limited in respect to their note issue. The total paid-up capital of the Scotch banks is £9,000,000. A large number of one-pound notes circulate in Scotland, thus tending to keep the requirements for gold low. From allowing a moderate rate of interest on money deposited with them, it is not uncommon for depositors in Scottish banks to lodge their money permanently as an investment; and the habit of keeping an account with a banker is much more general in Scotland than in England, branch offices of the banks being very numerous. Several of the Scotch banks have branch offices in London, but of course they cannot issue their own notes from these offices. The Scotch banks have enjoyed a high reputation for stability, and though public confidence was somewhat shaken by the failure of the Western Bank in 1857, and even more rudely by that of the City of Glasgow Bank in 1878, their shares are generally looked upon as a safe and remunerative investment. Their total deposits amount to over £80,000,000.

The banks in Ireland consist of one public or national bank, the Bank of Ireland, and of sundry joint-stock and private banks. The authorized note circulation is arranged on the same footing as that of the Scotch banks. If any bank discontinues its issue and issues notes of the Bank of Ireland, the circulation of the latter may be to an equal amount increased. The authorized circulation is £6,354,494, the actual circulation is sometimes a little above, sometimes a little below. The Bank of Ireland, which was established by charter in 1783 with similar privileges to those granted to the Bank of England, has lent the greater portion of its capital to government. Its capital is £2,769,230 (or £3,000,000 Irish); it has also a rest or reserve of over £1,000,000. The bank pays interest on money lodged for a stated period.

BANK.

Of all other banks the Bank of France is second in importance only to the Bank of England. It was established in the beginning of the present century, at first with a capital of 45,000,000 francs, and with the exclusive privilege in Paris of issuing notes payable to bearer, a privilege which was extended in 1848 to cover the whole of France. It has numerous branches in the larger towns, a number of these having been acquired in 1848, when certain joint-stock banks of issue were by government decree incorporated with the Bank of France, the capital of which was then increased to 91,250,000 francs (£3,650,000), in 91,250 shares of 1000 francs each. In 1857 the capital was doubled, and besides this it has a large surplus capital or rest. Like the Bank of England, it is a bank of deposit, discount, and circulation, and is a large creditor of the state. The government appoints the governor and the two deputy-governors, who are all required to be stockholders. There is also a body of fifteen directors and three censors, nominated by the shareholders. The value of its note circulation is about £115,000,000.

With regard to the banks in British colonies little need be said. All the more important are joint-stock concerns, and they are carried on subject to acts passed by the respective colonial legislatures. Some of them have their headquarters in London, and have been established by English capital. In Canada the banks are not allowed to issue notes of lower denominations than five dols., notes for small amounts up to four dols. being issued by the Dominion government; and the banking laws are such that there is no possibility of holders of bank-notes being losers by them. The total paid-up capital of the Canadian banks is about £12,000,000; their total deposits about £23,000,000.

The more important of the banks of the United States are what are called national banks, established in accordance with an act passed in 1863. Associations of this kind at starting must invest some portion of their paid-up capital in government bonds, which pay them an interest of 4 per cent more or less. They then obtain from the government bureau, established for the purpose, 90 per cent of paper-money issues which they sign and pay out, this constituting their note circulation. These banks pay no interest to depositors. Besides the notes of these banks a large portion of the

currency of the United States consists of government notes issued from the national treasury. There are also banks chartered by the different states and private banks.

Savings-banks are banks established for the receiving of small sums so as to be taken advantage of by the poorer classes, and they are carried on entirely for behoof of the depositors. They are of comparatively recent origin, one of the earliest having been an institution in which small sums were received and interest allowed on them, established by Mrs. Priscilla Wakefield, at Tottenham, near London, in 1803. The first savings-bank in Scotland was formed in 1810 by the Rev. Henry Duncan, of Ruthwell, Dumfriesshire. In 1814 the Edinburgh savings-bank was established on the same principles, and the system soon spread over the kingdom. The first act relating to savings-banks was passed in 1817. By it all deposits in savings-banks, as soon as they reached £50, were placed in the hands of the National Debt Commissioners, who allowed interest on them. In 1824 it was enacted that the deposits for the first year should not exceed £50, nor those in subsequent years £30, the total deposits being limited to £150; also, that no more interest should be paid when the deposits, with compound interest accruing on them, standing in the name of one individual should amount to £200. This enactment is still in force. The interest was fixed in 1880 at £3, depositors to receive £2, 15s. An act of 1833 had provided for the purchase of government annuities by depositors either for life or for a term of years; and by the act of 1844 the maximum limit of these was fixed at £30, allowing, however, a husband and a wife to hold separate annuities each of that amount. The minimum is £4. These banks are managed by local trustees, unpaid, and having no personal interest in the business. A new class of savings-banks, namely, *post-office savings-banks*, were established in Britain in connection with the money-order department of the post-office by an act of Parliament passed in 1861. Any sum not less than a shilling is received, so as not to exceed £30 in one year, or more than £150 in all; and when the principal amounts to £200, the payment of interest is to cease. Interest is paid on every complete pound at the rate of $2\frac{1}{2}$ per cent. For the deposits the government is responsible, and they may be drawn from any post-office savings-bank in the kingdom. Being

exceedingly numerous and very convenient in every way these savings-banks have been a great success, and have caused the transference to them of much of the funds formerly in the trustees' savings-banks. The total amount deposited in the latter class of banks in the United Kingdom is about £47,000,000, in the former over £50,000,000. By an act that came into operation in 1880 any person desiring to invest in government stock any sum of from £10 to £100 can do so through the post-office banks at a trifling cost and obtain the dividend free of charge. Savings-banks are now well known in all civilized countries, and the good they have done is incalculable. In the U. States there is an enormous amount of money deposited in them. Post-office savings-banks have been proposed to be established in the States, but have not yet been so. In Canada, Australia, and other British colonies they are established, as well as savings-banks of several other kinds. School savings-banks are the most recent institutions of this kind, and have had a marked effect for good.

Banki'va Fowl (*Gallus bankiva*), a fowl living wild in Northern India, Java, Sumatra, &c., believed to be the original of our common domestic fowls.

Bankrupt (from It. *banca*, a bench, and Lat. *ruptus*, broken, in allusion to the benches formerly used by the money-lenders in Italy, which were broken in case of their failure), a person whom the law does or may take cognizance of as unable to pay his debts. Properly it is of narrower signification than *insolvent*, an insolvent person simply being unable to pay all his debts. In England up till 1861 the term bankrupt was limited to an insolvent trader, and such traders were on a different footing from other insolvent persons, the latter not getting the same legal relief from their debts. In all civilized communities laws have been passed regarding bankruptcy. At present bankruptcy in England is regulated by the Bankruptcy Act of 1883, which has as its essential feature the intervention of the Board of Trade at all stages of the bankruptcy, with the object of obtaining full official supervision and control. A bankruptcy petition may be presented either by a creditor or a debtor. A creditor's petition must be founded on a debt of not less than fifty pounds, due to one or more creditors, and on an 'act of bankruptcy' committed by the debtor within three months before the presentation of the petition. A debtor

commits an act of bankruptcy if he makes a conveyance of his property to a trustee for the benefit of his creditors; if he makes a fraudulent transfer of any part of his property; if, to defeat or delay his creditors, he conceal himself either at home or abroad; if execution issued against him has been enforced by seizure and sale of his goods under process in an action in any court; if he files in court a declaration of inability to pay his debts, or presents a bankruptcy petition against himself; if a creditor has obtained a final judgment against him for any amount and he fail to pay the judgment debt without satisfactory reason; or if the debtor gives notice to any of his creditors that he has suspended, or is about to suspend, payment of his debts. In London jurisdiction in bankruptcy now rests with the High Court of Justice, while the county courts continue to have jurisdiction in bankruptcy outside the London district. When the court is satisfied as to the petition, a 'receiving order' is issued to protect the debtor's estate by constituting the official appointed by the Board of Trade receiver of the debtor's property, and to stay the remedies of all creditors until the meeting of creditors. The debtor must make out a full statement of his affairs, accounting as best he can for his insolvency. The official receiver summons the meeting of creditors, a summary of the debtor's affairs being sent to each creditor with the notice of the meeting, which is also advertised in the London Gazette. The creditors must send to the official receiver one day before the meeting sworn proofs of their claims to enable them to vote. At the meeting the creditors (unless the debtor's proposal for a composition or scheme be entertained) pass a resolution adjudging the debtor bankrupt, and appoint a trustee of the bankrupt's property, with a committee of inspection selected from their own body to superintend the administration of the bankrupt's property by the trustee, who divides the available realized assets amongst all creditors who have sent sworn proofs of claims. Rates, assessments, and taxes, and all wages or salary of a clerk, servant, labourer, or workman during four months before the date of the receiving order not exceeding £50 are paid in priority to all other debts. The trustee is required to give satisfactory security to the Board of Trade, by which his accounts are audited not less than twice in each year. All monies received by the

BANKRUPT.

trustee under the bankruptcy must be paid forthwith to an account kept at the Bank of England by the Board of Trade, called the 'Bankruptcy Estates Account.' The debtor is bound to be publicly examined upon oath in court, and any creditor who has tendered a proof, or his representative, may take part in the examination. Until the debtor has passed his public examination he cannot apply for an order of discharge, and upon proof of misdemeanour the court refuses or suspends the discharge. A bankrupt is disqualified from acting as member of parliament, justice of the peace, alderman, or overseer of the poor, or as a member of any school, highway, or burial board until the bankruptcy is annulled. An undischarged bankrupt obtaining credit to the extent of £20 or upwards from any person without informing such person of his status, is guilty of a misdemeanour. By the act of 1883 the creditors may at the first meeting resolve to entertain a proposal for a composition or scheme of arrangement of the debtor's affairs, but the composition or scheme shall not be binding on the creditors, unless confirmed at a second meeting by a majority in number representing three-fourths in value of all the creditors who have proved. The composition or scheme has then to be formally brought before the court for approval, which may be refused. A composition or scheme may be sanctioned by the court after the debtor's adjudication as a bankrupt, and in this case the bankruptcy is annulled. Though imprisonment for debt has been abolished, fraudulent bankrupts may be punished, and the conduct of prosecutions for offences arising out of any bankruptcy proceeding falls to the public prosecutor. The estates of persons dying insolvent may be administered according to the law of bankruptcy.

According to Scots law bankruptcy is notorious insolvency, that is, a public acknowledgment of inability to discharge obligations. By a judicial proceeding, called *sequestration*, authorized by the Court of Session or sheriff court, on the petition of the debtor himself with the concurrence of one creditor swearing to a debt of £50, two whose debts together amount to £70, or of any number of creditors whose debts together amount to £100; or on the petition of a creditor or creditors to the foregoing extent without the concurrence of the debtor, if he has clearly shown himself to

be insolvent (or a *notour bankrupt*), the whole estates and effects of the debtor, real and personal, are legally taken for behoof of the creditors. The debtor's estate is then made over to a trustee chosen by the creditors, the trustee being charged to bring the whole estate into the form of money, with certain precautions, and to receive, investigate, and reject or admit the claims of the creditors, subject to review of the Court of Session or sheriff court by summary petition. The debtor, and all who can give information as to the estate, must submit to public examination on oath before the sheriff of the county, and the debtor may thereafter, or by petition after six, twelve, or eighteen months from sequestration, be discharged of all debts by the court with consent of the creditors or a number of them, or at the expiry of two years without consent. These proceedings may be partly superseded by 'composition' if such be assented to by a majority in number and nine-tenths in value of creditors, or by a majority in number and four-fifths in value of the creditors, according to the period at which such arrangement may be proposed. They may also be terminated by a deed of arrangement entered into between the bankrupt and a majority in number and four-fifths in value of his creditors, approved of by the court. Before a discharge is given there must be a report from the trustee as to the conduct of the bankrupt, whether he has complied with the provisions of the act, whether his bankruptcy is culpable or not, &c. Before the abolition of imprisonment for ordinary civil debts by act passed in 1880, an insolvent debtor often took advantage of the surrender of his property to avoid prison.

In the United States, by an act approved July 1, 1898, a national Bankruptcy Law is in effect. It much resembles the English law, except that referees are substituted for receivers and are appointed by the court having jurisdiction in the district. All U. S. District Courts are constituted Courts of Bankruptcy. A person may file a petition for voluntary bankruptcy, if his debts amount to one thousand dollars. Creditors may file a petition for involuntary bankruptcy against a debtor and on the latter rests the onus of defense in proving his solvency. In such a case the debtor can claim the right of a trial by jury. The referee shall declare dividends and furnish lists to whom such are payable, to the trustee.

tee; the latter having possession of the estate in liquidation and being also a court appointee. Meetings of creditors are to be called by the court to be held in not less than 10 nor more than 30 days after adjudication, and at which meeting the bankrupt shall be present. The law does not affect proceedings commenced under State insolvency laws, commenced before this act takes effect.

Banks, Sir Joseph, Baronet, a distinguished naturalist, born in London 1743. After studying at Harrow and Eton he went to Oxford in 1760, and formed there amongst his fellow-undergraduates a voluntary class in botany, &c. He was chosen a member of the Royal Society in 1766, and soon after went to Newfoundland and Hudson's Bay to collect plants. In 1768, with Dr. Solander, a Swedish gentleman, pupil of Linnaeus, and then assistant librarian at the British Museum, he accompanied Cook's expedition as naturalist. In 1772 he visited Iceland along with Dr. Solander, and during this voyage the Hebrides were examined, and the columnar formation of the rocks of Staffa first made known to naturalists. In 1777 Banks was chosen president of the Royal Society, in 1781 was made a baronet, and in 1795 received the order of the Bath. He wrote only essays, papers for learned societies, and short treatises. He died 1820, and bequeathed his collections to the British Museum.

Banks, Thomas, an English sculptor, born in 1735, died in 1805. He studied sculpture in the Royal Academy, and in Italy, where he executed several excellent pieces, particularly a bass-relief representing Caractacus brought prisoner to Rome, and a Cupid catching a Butterfly, the latter work being afterwards purchased by the Empress Catharine. On leaving Italy he spent two unsatisfactory years in Russia, and then returned to England, where he was soon after made an academician. Among his other works was a colossal statue of Achilles Mourning the Loss of Briseis in the hall of the British Institution, and the monument of Sir Eyre Coote in Westminster Abbey.

Banks, Nathaniel Prentiss, U. S. General, born at Waltham, Mass., 1816. Learned the trade of a machinist, became a lecturer, then a local newspaper editor, studied law, a representative in the Legislature, Governor of Massachusetts, Speaker U. S. Congress 1856-57, and General of Volunteers in 1862. Died Sept. 1, 1894.

Banksian Pine (*Pinus banksiana*), a North American species growing around Hudson's Bay, about 25 feet high.

Banks'ring. See *Banxring*.

Bankura', a town of Bengal, on the Dhal-kisor river, healthy and with a considerable trade. Pop. 18,747.

Bann, UPPER and LOWER, two rivers in the N. of Ireland, the former rising in the mountains of Mourne, county Down, and after flowing 38 miles in a N. direction, falling into Lough Neagh, the latter being the outlet of Lough Neagh, and falling into the Atlantic Ocean 4 miles below Coleraine, after a course of nearly 40 miles.

Ban'natyne Club, a literary society instituted in Edinburgh (1823) by Sir Walter Scott (its first president), David Laing (secretary till its dissolution in 1865), Archibald Constable, and Thomas Thomson. It started with thirty-one members, subsequently extended to 100, having as its object the printing of rare works on Scotch history, literature, geography, &c. It derived its name from George Bannatyne (1545-1609), the collector of the famous MS. of early Scottish poetry.

Ban'ner, a piece of drapery, usually bearing some warlike or heraldic device or national emblem, attached to the upper part of a pole or staff, and indicative of dignity, rank, or command. Heraldically it is a square or quadrangular flag which varies in size with the rank of its possessor; and it is sometimes used specifically to denote an ensign, the attached edge of which is maintained in a horizontal position, as distinguished from the flag, which is fastened vertically to an upright.

Ban'neret, formerly, in England, a knight made on the field of battle as a reward for bravery, with the ceremony of cutting off the point of his pennon and making it a banner.

Ban'nock, a cake made of oatmeal, barley-meal, or pease-meal baked on an iron plate or griddle over the fire. From a supposed resemblance the turbot is sometimes called in Scotland the *Bannock-fluke*.

Bannockburn, a village of Scotland, in Stirlingshire, 2 miles S.E. Stirling, famous for the decisive battle in which King Robert Bruce of Scotland defeated Edward II. of England, on the 24th June, 1314. It has manufactures of woollens, such as tartans, carpets, &c.; pop. 3374.

Banns of Matrimony, public notice of the intended celebration of a marriage given

either by proclamation, *viva voce*, by a clergyman, session-clerk, or precentor in some religious assembly, or by posting up written notice in some public place.

Bannu, a district in the Punjab, Hindustan, on the north-western frontier; area, 3868 miles; pop. 332,577, of whom nearly half are Afghans.

Banquette (bang-ket'), in fortification, the elevation of earth behind a parapet, on which the garrison or defenders may stand. The height of the parapet above the banquette is usually about 4 feet 6 inches; the breadth of the banquette from $2\frac{1}{2}$ or 3 feet to 4 or 6 feet according to the number of ranks to occupy it. It is frequently made double, that is, a second is made still lower.

Bans. See **Banns**.

Banshee', **BEN-SHI'**, a weird hag believed in Ireland and some parts of Scotland to attach herself to a particular house, and to appear or make her presence known by wailing before the death of one of the family.

Ban'tam, a residency occupying the whole of the w. end of the island of Java. It formed an independent kingdom, governed by its own sultan, till 1683, and the Dutch exercised suzerainty with brief intermission until its formal incorporation by them at the beginning of the present century. It produces rice, coffee, sugar, cinnamon, &c. Serang is its capital. The town Bantam was the first Dutch settlement in Java (1595), and for some time their principal mart, though now greatly decayed.

Ban'tam Fowl, a small but spirited breed of domestic fowl, first brought from the East Indies, supposed to derive its name from Bantam in Java. Most of the sub-varieties have feathered legs; but these are not to be preferred. In point of colour the black and nankeen varieties take the palm. A well-bred bantam does not weigh more than a pound.

Banteng' (*Bos Banteng* or *Sondaicus*), a wild species of ox, native of Java and Borneo, having a black body, slender white

legs, short sleek hair, sharp muzzle, and the back humped behind the neck.

Banting System, a course of diet for reducing superfluous fat, adopted and recommended in 1863 by W. Banting of London. The dietary recommended was the use of butcher-meat principally, and abstinence from beer, farinaceous food, and vegetables.

Ban'try, a small seaport town near the head of Bantry Bay, county Cork, Ireland. —The *bay*, one of three large inlets at the s.w. extremity of Ireland, affords an unsurpassed anchorage, and is about 25 miles long

by 4 to 6 broad, and from 10 to 40 fathoms deep, with no dangerous rocks or shoals.

Bantu (bän-tö'), the ethnological name of a group of African races below about 6° N. latitude, and including the Kafirs, Zulus, Bechuanas, the tribes of the Loango, Congo, &c., but not the Hottentots.



Banyan Tree (*Ficus indica*).

Banu. See *Bannu*.

Banx'ring (genus *Tupaia*), a quadruped belonging to the Insectivora, inhabiting the Indian Archipelago, bearing some resemblance externally to a squirrel, but having a long pointed snout. They live among trees, which they ascend with great agility.

Ban'yan, or **BAN'IAN** (*Ficus indica*), a tree of India, of the fig genus. The most peculiar feature of this tree is its method of throwing out from the horizontal branches, supports which take root as soon as they reach the ground, enlarge into trunks, and extending branches in their turn, soon cover a prodigious extent of ground. A celebrated banyan-tree has been known to shelter 7000 men beneath its shade. The wood is soft and porous, and from its white glutinous juice bird-lime is sometimes prepared. Both juice and bark are regarded by the Hindoos as valuable medicines.

Ba'obab (*Adansonia digitata*), or **MONKEY-BREAD TREE**, a tree belonging to the natural order (or sub-order) Bombaceæ, and the only known species of its genus, which was named after the naturalist Adanson. It is one of the largest of trees, its trunk sometimes

attaining a diameter of 30 feet; and as the profusion of leaves and drooping boughs sometimes almost hides the stem, the whole forms a hemispherical mass of verdure 140 to 150 ft. in diameter and 60 to 70 ft. high. It is a native of Western Africa, and is found also in Abyssinia; it is cultivated in many of the warmer parts of the world. The roots are of extraordinary length, a tree 77 feet in girth having a tap-root 110 feet in length. The leaves are deep green, divided into five unequal parts lanceolate in shape, and radiating from a common centre. The flowers resemble the white poppy, having snowy petals and violet-coloured stamens; and the fruit, which is large and of an oblong shape, is said to taste like gingerbread, with a pleasant acid flavour. The wood is pale-coloured, light, and soft. The tree is liable to be attacked by a fungus which, vegetating in the woody part, renders it soft and pithlike. By the negroes of the west coast these trunks are hollowed into chambers, and dead bodies are suspended in them. There they become perfectly dry and well preserved, without further preparation or embalming. The baobab is emollient and mucilaginous; the pulverized leaves constitute *lalo*, which the natives mix with their daily food to diminish excessive perspiration, and which is even used by Europeans in fevers and diarrhoeas. The expressed juice of the fruit is used as a cooling drink in putrid fevers, and also as a seasoning for various foods.

Baph'omet, the imaginary idol or symbol which the Templars were accused of employing in their mysterious rites, and of which little or nothing is known.

Baptism (from the Greek *baptizō*, from *baptō*, to immerse or dip), a rite which is generally thought to have been usual with the Jews even before Christ, being administered to proselytes. From this baptism, however, that of St. John the Baptist differed, because he baptized Jews also as a symbol of the necessity of perfect purification from sin. Christ himself never baptized,

but directed his disciples to administer this rite to converts (Mat. xxviii. 19); and baptism, therefore, became a religious ceremony among Christians, taking rank as a sacrament with all sects which acknowledge sacraments. In the primitive church the person to be baptized was dipped in a river or in a vessel, with the words which Christ had ordered, generally adopting a new name to further express the change. Sprinkling, or, as it was termed, *clinic* baptism, was used only in the case of the sick who could not leave their beds. The Greek Church

and Eastern schismatics retained the custom of immersion; but the Western Church adopted or allowed the mode of baptism by pouring or sprinkling, since continued by most Protestants. This practice can be traced back certainly to the third century, before which its existence is disputed. Since the Reformation



Baobab Tree (*Adansonia digitata*).

there have been various Protestant sects called Baptists, holding that baptism should be administered only by immersion, and to those who can make a personal profession of faith. The Montanists in Africa baptized even the dead, and in Roman Catholic countries the practice of baptizing church-bells—a custom of tenth-century origin—continues to this day. Being an initiatory rite, baptism is only administered once to the same person. The Roman and Greek Catholics consecrate the water of baptism, but Protestants do not. The act of baptism is accompanied only with the formula that the person is baptized in the name of the Father, Son, and Holy Ghost; but, among most Christians, it is preceded by a confession of faith made by the person to be baptized if an adult, and by his parents or sponsors if he be a child. The Roman Catholic form of baptism is far more elaborate than the Protestant. This church teaches that all persons not baptized are damned, even unbaptized infants are not admitted into heaven; but for those with whom the absence of baptism was the chief fault, even St. Augus-

tine himself believed in a species of mitigated damnation. Protestants hold that though the neglect of the sacrament is a sin, yet the saving new birth may be found without the performance of the rite which symbolizes it. Naming the person baptized forms no essential part of the ceremony, but has become almost universal, probably from the ancient custom of renaming the catechumen.

Bap'tistery, a building or a portion of a building in which is administered the rite of baptism. In the early Christian Church the baptistery was distinct from the basilica or church, but was situated near its west end, and was generally circular or octagonal in form, and dome-roofed. About the end of the sixth century the baptistery began to be absorbed into the church, the font being placed within and not far from the western door. Some detached baptisteries still remain in use, as those of St. John Lateran, Rome, at Pisa, Parma, Ravenna, Florence, &c., that of Florence being 108 feet in diameter externally, and richly decorated. Baptisteries were dedicated to St. John the Baptist.

Bap'tists, a Protestant sect, distinguished by their opinions respecting the mode and subjects of baptism. With regard to the mode, they maintain the necessity of immersion, and with regard to the subjects, they consider that baptism ought not to be administered to children at all, nor to adults in general, but to those only who profess repentance and faith. They are sometimes called *Anti-pædobaptists*, to express their variance from those who defend infant baptism, and who are called *Pædobaptists*. Apart from the special sect of that name Baptists are to be found equally among Calvinists and Arminians, Trinitarians and Unitarians. The Baptists as a whole adopt the Independent or Congregational form of church government, and their ecclesiastical assemblies are held for the purpose of mutual stimulus and intercourse, and not for the general government of the body, or for interference with individual churches. The Particular Baptists of England (so called from believing that Christ died only for the elect), the Baptists of Scotland and Ireland, the Associated Baptists of America, and some of the Seventh-day Baptists, are Calvinistic. The other classes, such as the General Baptists (who believe that Christ died for all), are Arminian, or at least not Calvinistic. Most Baptists profess to be

Trinitarians. The Free-will Baptists, the Christian Society, and most of the General Baptists of England, admit of open communion: the other bodies decline communion with any Christians but Baptists. The Associated or Calvinistic Baptists long ranked in the United States as the most numerous denomination of Christians, though they appear now to be outstripped by the Methodists, especially if the latter are considered as one great sect, and not rather as a mere aggregate of different sects. The Seventh-day Baptists, or Sabbatarians, observe the seventh day of the week. The Free-will Baptists profess the doctrine of free salvation. The Anabaptists of the Reformation period are not to be confounded with the Baptists, by whom their principles were expressly disclaimed. The first regular Baptist church appears to have been formed in the reign of Elizabeth, but we may date their first public acknowledgment as distinct from the Anabaptists from their petition to Parliament in 1620. The year 1633 provides the earliest record of the formation of a Particular Baptist church in London. In 1689 a Baptist General Assembly, held in London, formulated a confession of thirty-two articles and a catechism. The Baptist Union formed in 1832 comprehends the greater number of members of the sect in Great Britain and Ireland. The total number of members of Baptist churches in the United Kingdom is not much more than 300,000. There are nine colleges for training ministers, of which the chief are: Bristol Baptist College; Regent's Park; Rawdon, Bradford; and the Metropolitan Pastors' College. In Canada there are in all about 300,000 Baptists. In the United States there are three bodies of *Regular Baptists*, the northern, southern, and coloured. They are not separate by virtue of doctrinal or ecclesiastical differences; but each has its own associations, state conventions, and general missionary and other organizations. The question of slavery divided the Baptists of the northern and southern states, culminating in 1845. The Regular Baptists accept the Bible as the only rule of faith and practice. There are two general confessions of faith—the Philadelphia and the New Hampshire confession. The northern Baptists number (1890) 800,025 communicants, with 414 associations. The southern Baptists have (1890) 657 associations, with 1,276,491 members. The coloured Baptists number (1890) 1,362,140

communicants, in 15 southern states and District of Columbia. *The Primitive Baptists* are so called because of their opposition to the establishment of Sunday-schools, mission, Bible, and other societies. The total of members (1890) is 94,348, with 2687 organizations, in 24 states. The *Old Two-seed-in-the-Spirit Predestinarian Baptists* are strongly Calvinistic, holding to the doctrine of predestination. The phrase 'Two Seed' indicates their belief that there are two seeds, one of death and one of life. They are opposed to a paid ministry. They number (1890) 9,932 communicants. The *General Baptists* hold that the atonement of Christ was general, not particular—that is, for the whole race, and not simply for those effectually called. They have (1890) 21,362 communicants. The *Original Free-will Baptists* hold to the doctrine of the freedom of the will; that those 'ordained to condemnation' will not repent and believe the gospel. They had (1890) 11,864 members. The *Free-will Baptists* believe in open communion, and that the human will is 'free and self-determined, having power to yield to gracious influences and live, or resist them and perish.' They have (1890) 51 yearly meetings and 87,898 communicants.

Baraguey-d'hilliers (bâ-râ-gâ-dêl-yâ), LOUIS, a distinguished French general under first empire, born in Paris 1764. He served in the army of Italy and in Egypt, Germany, and Spain; and in the Russian campaign of 1812 commanded a division. He was intrusted with the direction of the vanguard in the retreat, but was compelled to capitulate. Napoleon ordered him to return to France as under arrest, but he died at Berlin on the way, Dec. 1812.

Barbadoes, or BARBADOS, the most eastern of the West India Islands, first mentioned in 1518, and occupied by the British in 1625. Length 21 miles, breadth 13; area, 106,470 acres or 166 sq. miles; mostly under cultivation. It is divided into eleven Church of England parishes; capital, Bridgetown. It is more densely peopled than almost any spot in the world, the population in 1891 being 182,306, or about 1098 to the square mile. The climate is very hot, though moderated by the constant trade-winds; and the island is subject to dreadful hurricanes. The surface is broken, now without forests, and with few streams; the highest point is 1145 feet above the sea-level. There are few indigenous mammals or birds. The black low-

land soil gives great returns of sugar in favourable seasons. The chief exports, besides sugar, are molasses and rum; imports: rice, salt meat, corn, butter, flour, &c. The exports are usually over £1,000,000 in value. Barbadoes has a considerable transit trade, being in some measure the central mart for all the Windward Islands. It is the see of a bishop and the head-quarters of the British forces in the West Indies. There is a railway across the island, also tramways, telephones, &c. The island forms a distinct government under a governor, an executive and a legislative council, and a house of assembly. Liberal provision is made for education both by old foundations and by annual vote.

Barbadoes Cherry, the pleasant tart, fleshy fruit of *Malpighia urens*, a West Indian tree 15 ft. high.

Barbadoes Gooseberry, the fruit of *Pereskia aculeata*, a W. Indian species of Cactus.

Barbadoes Leg, a form of elephantiasis.

Bar'bara, ST., according to the legend belonged to Nicomedia, in Asia Minor, and was beheaded by her father for having turned Christian, he being immediately thereafter struck dead by lightning. She is invoked in storms, and is considered the patron saint of artillerists.

Barbarelli. See *Giorgione*.

Barbarian (Greek, *barbaros*), a name given by the Greeks, and afterwards by the Romans, to every one who spoke an unintelligible language; and hence coming to connote the idea of *rude, illiterate, uncivilized*. This word, therefore, did not always convey the idea of something odious or savage; thus Plautus calls Nævius a barbarous poet, because he had not written in Greek; and Cicero terms illiterate persons without taste 'barbarians.'

Barbarossa (Italian, 'red-beard'), a surname given to Frederick I. of Germany.

Barbarossa ('red-beard'), the name of two famous Turkish corsairs of the sixteenth century, who ravaged the shores of the Mediterranean, and established themselves in Algiers. The elder of the brothers, Aruch or Horuk, was killed in 1518; the younger and more notorious, Hayraddin, who captured Tunis, died in 1546.

Bar'bary, a general name for the most northerly portion of Africa, extending about 2600 miles from Egypt to the Atlantic, with a breadth varying from about 140 to 550 miles; comprising Marocco, Fez, Algeria, Tunis, and Tripoli (including Barca

and Fezzan). The principal races are: the Berbers, the original inhabitants, from whom the country takes its name; the Arabs, who conquered an extensive portion of it during the times of the caliphs; the Bedouins, Jews, Turks, and the French colonists of Algeria, &c. The country, which was prosperous under the Carthaginians, was, next to Egypt, the richest of the Roman provinces, and the Italian states enriched themselves by their intercourse with it. In the fifteenth century, however, it became infested with adventurers who made the name of Barbary corsair a terror to commerce, a condition of things finally removed by the French occupation of Algeria.

Barbary Ape (*Inŭus ecaudātus*), a species of ape, or tailless monkey, with greenish-brown hair, of the size of a large cat, remarkable for docility, also called the *magot*. It is common in Barbary and other parts of Africa, and some used to live formerly on Gibraltar Rock, being the only European monkey, though probably not indigenous. It has been the 'showman's ape' from time immemorial.

Bar'bastel, **BARBASTELLE**, a bat with hairy lips (*Barbastellus commūnis*), a native of England.

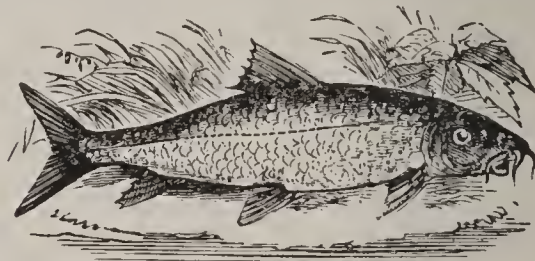
Barbas'tro, a city, Spain, Arragon, province of Huesca, with an interesting cathedral, and some trade and manufactures. Pop. 8164.

Bar'bould, **ANNA LETITIA**, English poet and general writer, was born in Leicestershire 1743, daughter of a Presbyterian minister named Aikin. She published a small volume of miscellaneous poems in 1772, and in 1773, in conjunction with her brother, Dr. John Aikin, a collection of pieces in prose. In 1774 she married the Rev. Rochemont Barbould. Her *Early Lessons and Hymns for Children*, and various essays and poems, won considerable popularity. She edited a collection of English novels, with critical and biographical notices; a selection from the British essayists of the reign of Anne, and another from Richardson's correspondence. Her last long poem, *Eighteen Hundred and Eleven*, appeared in 1812. She died at Stoke-Newington, 1825.

Bar'becue, a word of West Indian origin, meaning a hog, or other large animal, roasted whole.

Barbel (*Barbus*), a genus of fresh-water fishes of the carp family, distinguished by the four fleshy filaments growing from the lips, two at the nose and one at each corner

of the mouth, forming the kind of beard to which the genus owes its name. Of the several species the European *Barbus vulgāris*, common in most rivers, has an average length of from 12 to 18 inches, and



Barbel (*Barbus vulgāris*).

in form and habits strongly resembles the pike. Its body is elongated and rounded, olive-coloured above and bluish on the sides, and covered with small scales. The upper jaw, which is much longer than the lower, forms a snout, with which it bores into the mud for worms, insects, aquatic plants, &c. It weighs from 9 to 20 pounds. It gives good sport to the angler; but its flesh is very coarse, and at the time of spawning the roe is dangerous to eat.

Barber, one whose occupation is to shave or trim the beard, or to cut and dress hair. The practice of surgery was formerly a part of the craft, and by an act of Henry VIII. the Company of Barbers was incorporated with the Company of Surgeons—the company being then known as the Barber-surgeons—with the limitation, however, that the surgeons were not to shave or practise 'barbery,' and the barbers were to perform no higher surgical operation than blood-letting and tooth-drawing. This continued till the time of George II. The signs of the old profession—the pole which the patient grasped, its spiral decoration in imitation of the bandage, and the basin to catch the blood—are still sometimes retained. The barbers' shops, always notorious for gossip, were in some measure the news-centres of classic and mediæval times.

Barberini (bār-be-rē'nē), a celebrated Florentine family, which, since the pontificate of Maffeo Barberini (Urban VIII., 1623 to 1644), has occupied a distinguished place among the nobility of Rome. During his reign he seemed chiefly intent on the aggrandizement of his three nephews, of whom two were appointed cardinals, and the third Prince of Palestrina.

Bar'berry, a genus of shrubs, order Berberidaceæ, the common barberry (*Berberis vulgāris*) having bunches of small beautiful

red berries, somewhat oval; serrated and pointed leaves; thorns, three together, upon the branches; and hanging clusters of yellow flowers. The berries nearly approach the tamarind in respect of acidity, and when boiled with sugar make an agreeable preserve, rob, or jelly. They are also used as a dry sweetmeat, and in sugar-plums or comfits; are pickled with vinegar, and are used for the garnishing of dishes. The bark is said to have medicinal properties, and the inner bark and roots with alum yield a fine yellow dye. The shrub was originally a native of eastern countries, but is now generally diffused in Europe, as also in North America. In England it has been almost universally banished from hedgerows, from the belief that it causes rust on corn—a supposition supported by the fact that it is subject itself to attacks of a sort of epiphyte. Numerous other species belong to Asia and America.

Bar'berton, the chief mining centre of De Kaap gold fields, Transvaal, about 80 miles from Lydenburg, and 150 to 160 from Delagoa Bay. Pop. about 4000.

Bar'bets (*Bucconidae*), a family of climbing birds with a thick conical beak, having tufts of bristles at its base. Their wings are short and their flight somewhat heavy. They have been divided into three subgenera:—The *barbicans* (*Pogonias*), inhabiting India and Africa, and feeding chiefly on fruit; the *barbets* proper (*Bucco*), found in Africa and America, and nearly related to the woodpeckers; and the *puff-birds* (*Tumatia*), inhabiting America, and feeding on insects.

Barbette (bâr-bet'), an elevation of earth behind the breastwork of a fortification, from which the artillery may be fired over the parapet instead of through an embrasure. A barbette carriage is a carriage which elevates a gun sufficiently high to permit its being fired over the parapet.

Barbeyrac (bâr-bâ-râk), JEAN, an able writer on jurisprudence and natural law, translator of Grotius and Cumberland, and translator and annotator of Puffendorf. Born 1674; professor of law at Lausanne and Groningen; died 1744.

Barbican. See *Barbacan*.

Barbié du Bocage (bârb-yâ dü bô-kâzh), JEAN DENIS, a distinguished geographer, born in Paris in 1760, who laid the foundation of his fame in 1788 by his *Atlas to Barthélemy's Voyage du Jeune Anacharsis*. His maps and plans to the works of Thucy-

dides, Xenophon, &c., exhibit much erudition, and materially advanced the science of ancient geography. He also prepared many modern maps, and published various excellent dissertations. He held many honourable posts, and died in 1825.

Barbier (bârb-yâ), ANTOINE ALEXANDRE, bibliographer (1765–1825). He was appointed keeper of the library of the Conseil d'État in 1798; Napoleon made him his librarian in 1807; and he was afterwards librarian to Louis XVIII. His *Catalogue de la Bibliothèque du Conseil d'État* (1801–3), and a *Dictionnaire des Ouvrages Anonymes et Pseudonymes* (1806–9), are both valuable works.

Barbieri (bâr-bē-â'rē), GIOVANNI FRANCESCO, otherwise known as *Guercino* (the squinter) *da Cento*, an eminent and prolific historical painter, born near Bologna 1590, died in 1666. His style showed the influence of Caravaggio and of the Caracci, his best work being of the latter school. Chief work, a St. Petronilla in the Capitol at Rome; but most of the large galleries have pictures by him.—PAOLO ANTONIO BARBIERI, a celebrated still-life and animal painter, was a brother of Guercino; born 1596, died 1640.

Bar'bour, JOHN, an ancient Scottish poet, contemporary with Chaucer, born about 1316. By 1357 he was archdeacon of Aberdeen, and in the following year was appointed a commissioner to treat for the ransom of David II. He appears as auditor of the exchequer oftener than once, as travelling through England on several occasions, and was pensioned by Robert II. His chief poem, *The Bruce*, written about 1375, was first published in 1571, and a MS. exists in the Advocates' Library, Edinburgh, dated 1489. Of another long poem, setting forth the Trojan origin of the Scottish kings, no MS. remains, unless a portion of two Troy books in the Cambridge and Bodleian libraries may be ascribed to Barbour. He has also been credited, probably without sufficient grounds, with having compiled a *Book of Legends of Saints*, existing in a single MS. at Cambridge, and published only in recent times. He died in 1395. He was the father of Scottish poetry and history, and his *Bruce* is linguistically of high value. Though wanting in the higher qualities of poetry, it is truthful and natural, and often exhibits a high moral dignity.

Barbuda (bâr-bô'da), one of the West Indies, annexed by Britain in 1628; about

15 miles long and 8 wide; lying north of Antigua; pop. 800. It is flat, fertile, and healthy. Corn, cotton, pepper, and tobacco are the principal produce, but the island is only partially cleared for cultivation. There is no harbour, but a well-sheltered roadstead on the w. side. It is a dependency of Antigua.

Barby (bär'bē), a German town on the Elbe, in the government of Madgeburg, with an old castle. Pop. 5540.

Bar'ca, a division of N. Africa, between the Gulf of Sidra and Egypt, a vilayet of the Turkish Empire, capital Bengazi. It formed a portion of the ancient Cyrenaica, and from the time of the Ptolemies was known as Pentapolis from its five Greek cities. The country forms mostly a rocky plateau. A large portion of it is desert, but some parts, especially near the coast, are fertile, and yield abundant crops and excellent pasture, the chief being wheat, barley, dates, figs, and olives. Flowering shrubs, roses, honey-suckles, &c., occur in great variety. There are hardly any permanent streams, but the eastern portion is tolerably well watered by rains and springs. The exports are grain and cattle, with ostrich feathers and ivory from the interior. Next to Bengazi the seaport of Derna is the chief town. The pop. probably does not exceed 300,000.

Barcarolle (-rol'), a species of song sung by the *barcaruoli*, or gondoliers of Venice, and hence applied to a song or melody composed in imitation.

Barcellona (bär-chel-ō'nà), seaport, Sicily, province of Messina, immediately contiguous upon Pozzo di Gotto, and practically forming one town with it. Joint pop. 14,471.

Barcelona (bär-thel-ō'nà), one of the largest cities of Spain, chief town of the province of Barcelona, and formerly capital of the kingdom of Catalonia; finely situated on the northern portion of the Spanish Mediterranean coast. It is divided into the upper and lower town; the former modern, regular, stone-built, and often of an English architectural type, the latter old, irregular, brick-built, and with traces of Eastern influence in the architecture. The harbour, though spacious, does not admit vessels of more than 12 ft. draught. The principal manufactures are cottons, silks, woollens, machinery, paper, glass, chemicals, stoneware, soap; exports manufactured goods, wine and brandy, fruit, oil, &c.; imports coals, textile fabrics, machinery,

cotton, fish, hides, silks, timber, &c. The city contains a university, several public libraries, a museum, a large arsenal, cannon foundry, &c. Barcelona was, until the twelfth century, governed by its own counts, but was afterwards united with Arragon. In 1640, with the rest of Catalonia, it placed itself under the French crown; in 1652 it submitted again to the Spanish government; in 1697 it was taken by the French, but was restored to Spain at the Peace of Ryswick. It has had several severe visitations of cholera and yellow fever, and has been the scene of many serious and sanguinary revolts, as in 1836, 1840, and 1841. Pop. 272,481 in 1887. The province has an area of 2985 sq. m.; pop. 899,264. It is generally mountainous, but well cultivated, and among the most thickly peopled in Spain.

Barcelona, town of Venezuela, near the mouth of the Neveri, which is navigable for vessels of small size, but larger vessels anchor off the mouth of the river. Pop. 11,424.

Barcelona Nuts, hazel-nuts exported from the Barcelona district of Spain.

Bar'clay, ALEXANDER, a poet of the sixteenth century, most probably a native of Scotland, born about 1475, for some years a priest and chaplain of St. Mary Ottery, in Devonshire, afterwards a Benedictine monk of Ely, subsequently a Franciscan, and latterly the holder of one or two livings; died 1552. His principal work was a satire, entitled *The Shyp of Follys of this Worlde*, part translation and part imitation of Brandt's *Narrenschiff* (*Ship of Fools*), and printed by Pynson in 1509. He also wrote a *Myrrour of Good Maners*, and some *Egloges* (*Eclogues*), both printed by Pynson, as well as translations, &c.

Barclay, JOHN, poet and satirist, son of a Scotch father, born at Pont-à-Mousson (Lorraine), in 1582, and probably educated in the Jesuits' College there. Having settled in England he published a Latin politico-satirical romance, entitled *Euphormionis Satyricon*, having as its object the exposure of the Jesuits. In 1616 he left England for Rome, received a pension from Pope Paul V., and died in 1621. His chief work is a singular romance in Latin, entitled *Argenis* (Paris, 1621), thought by some to be an allegory bearing on the political state of Europe at the period. It has been translated into several modern languages.

Barclay, ROBERT, the celebrated apolo-

gist of the Quakers, born in 1648, at Gordonstown, Moray, and educated at Paris, where he became a Roman Catholic. Recalled home by his father, he followed the example of the latter and became a Quaker. His first treatise in support of his adopted principles, published at Aberdeen in the year 1670, under the title of *Truth Cleared of Calumnies*, together with his subsequent writings, did much to rectify public sentiment in regard to the Quakers. His chief work, in Latin, *An Apology for the True Christian Divinity*, as the same is Preached and held forth by the People called, in scorn, Quakers, was soon reprinted at Amsterdam, and quickly translated into German, Dutch, French, and Spanish, and, by the author himself, into English. His fame was now widely diffused; and, in his travels with William Penn and George Fox through England, Holland, and Germany, to spread the opinions of the Quakers, he was received everywhere with the highest respect. The last of his productions, *On the Possibility and Necessity of an Inward and Immediate Revelation*, was not published in England until 1686; from which time Barclay lived quietly with his family. He died, after a short illness, at his own house of Ury, Kincardineshire, in 1690. He was a friend of and had influence with James II.

Barclay de Tolly, MICHAEL, PRINCE, a distinguished general and field-marshal of Russia, born in 1755. His family, of Scottish origin, had been established in Livonia since 1689. He entered the army at twelve years of age, served in various campaigns against the Turks, Swedes, and Poles, and in 1811 was named minister of war. On the invasion of Napoleon he was transferred to the chief command of the army, and adopted a plan of retreat; his forces did not greatly exceed 100,000 men, but the court became impatient, and after the capture of Smolensk by the French he was superseded by Kutusoff. Sinking all personal feeling, he asked leave to serve under his successor, commanded the right wing at the battle of the Moskwa, maintained his position, and covered the retreat of the rest of the army. After the battle of Bautzen, in 1813, he was reappointed to the chief command, which he had soon after to resign to Prince Schwarzenberg. He forced the surrender of General Vandamme after the battle of Dresden, took part in the decisive battle of Leipzig, and was made a field-marshal in Paris. In 1815 he received

from the emperor the title of prince, and from Louis XVIII. the badge of the order of Military Merit. He died in 1818.

Bar-cochba (bâr-koh'bâ), SIMON, a Jewish impostor, who pretended to be the Messiah, raised a revolt, and made himself master of Jerusalem about 132 A.D., and of about fifty fortified places. Hadrian sent to Britain for Julius Severus, one of his ablest generals, who gradually regained the different forts and then took and destroyed Jerusalem. Bar-cochba retired to a mountain fortress, and perished in the assault of it by the Romans three years after, about 135.

Bar'coo. See *Cooper's Creek*.

Bard, one of an order among the ancient Celtic tribes, whose occupation was to compose and sing verses in honour of the heroic achievements of princes and brave men, generally to the accompaniment of the harp. Their verses also frequently embodied religious or ethical precepts, genealogies, laws, &c. Their existence and function was known to the Romans two centuries B.C.; but of the Gallic bards only the tradition of their popularity survives. The first Welsh bards of whom anything is extant are Taliesin, Aneurin, and Llywarch, of the sixth century. A considerable lacuna then occurs in their history until the order was reconstituted in the tenth century by King Howel Dha, and again in the eleventh by Gryffith ap Conan. Edward I. is said to have hanged all the Welsh bards as promoters of sedition. Some attempts have been made in Wales for the revival of bardism, and the Cambrian Society was formed in 1818, for this purpose and for the preservation of the remains of the ancient literature. The revived Eisteddfodan, or bardic festivals, have been so far exceedingly popular. In Ireland there were three classes of bards: those who sang of war, religion, &c., those who chanted the laws, and those who gave genealogies and family histories in verse. They were famous harpists. In the Highlands of Scotland there are considerable remains of compositions supposed to be those of their old bards still preserved.

Bardesa'nes, a Syrian Gnostic, who lived in the reign of Marcus Aurelius, in Edessa, and whose system started with the statement that from the union of God with matter sprang Christ and a female Holy Ghost, from whom in turn sprang various existences. He propagated his doctrines in Syrian hymns, the first in the language. His son, Harmonius, was also an able hymn-writer.

The Bardesanists maintained themselves till the fifth century.

Bardwan', or **BURDWAN'**, a division of Bengal, upon the Hugli, comprising the six districts of Bardwan, Hugli, Howrah, Midnapur, Bankura, and Birbhum. Area, 13,855 sq. miles; pop. 7,393,954.—The district Bardwan has an area of 2697 sq. miles, and a pop. of 1,391,823. Apart from its products, rice, grain, hemp, cotton, indigo, &c., it has a noted coal-field of about 500 sq. miles in area, with an annual output of about half a million tons.—The town of Bardwan has a fine palace of the Maharajah and a pop. of 34,080.

Barebone, or **BARBONE**, PRAISE-GOD, the name of a leather seller in Fleet Street, London, who obtained a kind of lead in the convention which Cromwell substituted for the Long Parliament, and which was thence nicknamed the Barebone Parliament. After its dissolution he disappears till 1660, when he presented a petition to Parliament against the restoration of the monarchy. In 1661 he was committed to the Tower for some time, but his subsequent history is unknown.

Barefooted Friars, monks who use sandals, or go barefoot. They are not a distinct body, but may be found in several orders of mendicant friars—for example, among the Carmelites, Franciscans, Augustines. There were also barefooted nuns.

Barége (ba-rāzh'), a light, open tissue of silk and worsted or cotton and worsted for women's dresses, originally manufactured near Baréges.

Baréges (bā-rāzh), a watering-place, s. of France, dep. Hautes-Pyrénées, about 4000 feet above the sea, celebrated for its thermal springs, which are frequented for rheumatism, scrofula, &c. The place is hardly inhabited except in the bathing season, June till September.

Baregine (ba-rāzh'in; from *Baréges*), a gelatinous product of certain algæ growing in sulphuric mineral springs, and imparting to them the colour and odour of flesh-broth.

Bareilly (ba-rā'li), a town of Hindustan in the N.W. Provinces, capital of a district of same name, on a pleasant and elevated site. It has a fort and cantonments, a government college, and manufactures sword-cutlery, gold and silver lace, perfumery, furniture and upholstery. On the outbreak of the Indian mutiny the native garrison took possession of the place, but it was retaken by Lord Clyde in May, 1858. Pop. 103,160. The district has an area of 1614 sq. miles; pop. 1,030,936.

Bar'ents, **WILLIAM**, a Dutch navigator of the end of the sixteenth century, who, on an expedition intended to reach China by the north-east passage, discovered Nova Zembla. He wintered there in 1596-97, and died before reaching home.

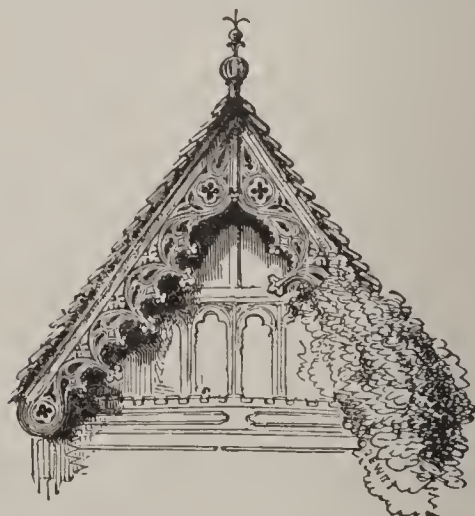
Baret'ti, **JOSEPH**, an Italian writer, born at Turin, 1716. In 1748 he came to England, and in 1753 published in English a *Defence of the Poetry of Italy* against the *Censures of M. Voltaire*. In 1760 he brought out a useful Italian and English Dictionary. After an absence of six years, during part of which he edited the *Frusta Letteraria* (Literary Scourge) at Venice, he returned to England, and in 1768 published an *Account of the Manners and Customs of Italy*. Not long after, in defending himself in a street brawl, he stabbed his assailant and was tried for murder at the Old Bailey, but acquitted; Johnson, Burke, Goldsmith, Garrick, Reynolds, and Beauclerk giving testimony to his good character. An English and Spanish Dictionary, and various other works, followed before his death in 1789.

Barfleur (bār-fleur), at one time the best port on the coast of Normandy, and the reputed port from which William the Conqueror sailed. It was destroyed in the year 1346 by Edward III. Present pop. 1304.

Barfrush', **BARFURUSH'**. Same as *Balfroosh*.

Bargain and Sale, a legal term denoting the contract by which lands, tenements, &c., are transferred from one person to another.

Barge, a term similar in origin to *barque*, but generally used of a flat-bottomed boat



Barge-board of 15th century, Ockwells, Berkshire.

of some kind, whether used for loading and unloading vessels, or as a canal-boat, or as an ornamental boat of state or pleasure.

Barge-board (perhaps a corruption of

verge-board), in architecture, a board generally pendent from the eaves of gables, so as to conceal the rafters, keep out rain, &c. They are sometimes elaborately ornamented. The portion of the roof projecting from the wall at the gable-end, and beneath which the barge-board runs, is termed the *barge-course*.

Barham (bar'am), REV. RICHARD HARRIS, a humorous writer, born in 1788 at Canterbury; educated at Paul's School, London, and at Brasenose, Oxford; appointed in succession curate of Ashford, curate of Westwell, rector of Snargate, in Romney Marsh, and one of the minor canons of St. Paul's Cathedral. He published an unsuccessful novel, *Baldwin*, wrote nearly a third of the articles in Gorton's *Biographical Dictionary*, and contributed to *Blackwood's Magazine*. In 1824 he was appointed priest in ordinary of the chapel-royal, and afterwards rector of St. Mary Magdalene and St. Gregory-by-St.-Paul, London. In 1837, on the starting of Bentley's *Miscellany*, he laid the main foundation of his literary fame by the publication in that periodical of the *Ingoldsby Legends*. He died in 1845.

Barhebræ'us. See *Abulfaragius*.

Bari (bä'rē; anc. *Barium*), a seaport, S. Italy, on a small promontory of the Adriatic, capital of the province Terra di Bari. It was a place of importance as early as the third century B.C., and has been thrice destroyed and rebuilt. The present town, though poorly built for the most part, has a large Norman castle, a fine cathedral and priory, &c. It manufactures cotton and linen goods, hats, soap, glass, and liqueurs; has a trade in wine, grain, almonds, oil, &c., and is now an important seaport. Pop. about 70,000. The province has an area of 2280 sq. miles, and is fertile in fruit, wine, oil, &c.; pop. 679,000.

Bari, a negro people of Africa, dwelling on both sides of the White Nile, and having Gondokoro as their chief town. They practise agriculture and cattle-rearing. Their country was conquered by Baker for Egypt.

Baril'la, the commercial name for the impure carbonate and sulphate of soda imported from Spain and the Levant. It is the Spanish name of a plant (*Salsöla Soda*), from the ashes of which and from those of others of the same genus the crude alkali is obtained. On the shores of the Mediterranean the seeds of the plants from which it is obtained are regularly sown near the sea, and these, when at a sufficient state of ma-

turity, are pulled up, dried, and burned in bundles in ovens or in trenches. The ashes, while hot, are continually stirred with long poles, and the saline matter they contain forms, when cold, a solid mass, almost as hard as stone. To obtain the carbonate of soda it is only requisite to lixivate the barrilla in boiling water, and evaporate the solution. British barrilla or kelp is a still more impure alkali obtained from burning seaweeds. Soda is now obtained for the most part from common salt.

Baring-Gould (bā-ring-göld'), SABINE, English clergyman and author, born at Exeter 1834. Educated at Cambridge, he has held several livings in the English Church, being now rector of Lew Trenchard, Devon. He has written with success on theological and miscellaneous subjects, and has latterly distinguished himself as a novelist. Among his works are: *Iceland, its Scenes and Sagas*; *Curious Myths of the Middle Ages*; *The Origin and Development of Religious Belief*; *Lives of the Saints* (in 15 vols.); *Village Sermons*; *The Vicar of Morwenstowe* (an account of the Rev. R. S. Hawker); *The Mystery of Suffering*; &c.; besides the novels (unacknowledged) *Mehalah*, *John Herring*, *Richard Cable*, *The Gaverocks*, &c.; and short stories or novelettes.

Baringo, a lake in Africa, N.E. of the Victoria Nyanza, about 20 miles long.

Bar'itone, or BAR'YTONE, a male voice, the compass of which partakes of those of the common bass and the tenor, but does not extend so far downwards as the one, nor to an equal height with the other. Its best tones are from the lower A of the bass clef to the lower F in the treble. Formerly applied to lower, or heavy, bass voice: *bary*, *i. e.* heavy, tone.

Ba'rium, the metallic basis of baryta, which is an oxide of barium; specific gravity 4; symbol Ba. It is only found in compounds, such as the common sulphate and carbonate, and was isolated by Davy for the first time in 1808. It is a yellow, malleable metal, which readily oxidizes, decomposes water, and fuses at a low tem-

Bark, the exterior covering of the stems of exogenous plants. It is composed of cellular and vascular tissue, is separable from the wood, and is often regarded as consisting of four layers: 1st, the *epidermis* or *cuticle*, which, however, is scarcely regarded as a part of the true bark; 2d, the *epiphloeum* or outer cellular layer of the true

bark or *cortex*; 3d, the *mesophlœum* or middle layer, also cellular; 4th, an inner vascular layer, the *liber* or *endophlœum*, commonly called *bast*. Endogenous plants have no true bark. Bark contains many valuable products, as gum, tannin, &c.; cork is a highly useful substance obtained from the epiphlœum; and the strength and flexibility of bast makes it of considerable value. Bark used for tanning is obtained from oak, hemlock-spruce, species of acacia growing in Australia, &c. Angostura bark, Peruvian or cinchona bark, cinnamon, cascarilla, &c., are useful barks.

Bark. See *Barque*.

Bark, PERUVIAN, is the bark of various species of trees of the genus *Cinchona*, found in many parts of South America, but more particularly in Peru, and having medicinal properties. It was formerly called *Jesuit's bark*, from its having been introduced into Europe by Jesuits. Its medicinal properties depend upon the presence of *quinine*, which is now extracted from the bark, imported, and prescribed in place of nauseous mouthfuls of bark. See *Cinchona*.

Barker's Mill, also called Scottish turbine, a hydraulic machine on the principle of what is known as the hydraulic tourniquet. This consists of an upright vessel free to rotate about a vertical axis, and having at its lower end two discharging pipes projecting horizontally on either side and bent in opposite directions at the ends, through which the water is discharged horizontally, the direction of discharge being mainly at right angles to a line joining the discharging orifice to the axis. The backward pressures at the bends of the tubes, arising from the two issuing jets of water, cause the apparatus to revolve in an opposite direction to the issuing fluid.

Barking, a town, England, county of Essex, on the Roding, 7 miles N.E. from London, with some important manufacturing works. Near it is the outfall of the sewage of a large part of London. Pop. 14,301.

Barkston Ash, a parl. div. of the West Riding of Yorkshire.

Bark-stove, BARK-BED, a sort of hot-house for forcing or for growing plants that require a great heat combined with moisture, both of which are supplied by the fermentation that sets up in a bed of spent tanner's bark contained in a brick pit under glass.

Bar'laam and Jos'aphat, a famous mediæval spiritual romance, which is in its main

details a Christianized version of the Hindu legends of Buddha. The story first appeared in Greek in the works of Joannes Damascenus in the eighth century. The compilers of the *Gesta Romanorum*, Boccaccio, Gower, and Shakespeare have all drawn materials from it.

Bar-le-duc (bâr-l-dük), a town of North-east France, capital of dep. Meuse, with manufactures of cotton and woollen stuffs, leather, confectionery, &c. Pop. 15,140.

Barlet'ta, a seaport in South Italy, province of Bari, on the Adriatic, with a fine Gothic cathedral; it has a considerable export trade in grain, wine, almonds, &c. Pop. 31,994.

Bar'ley, the name of several cereal plants of the genus *Hordeum*, order Gramineæ (grasses), yielding a grain used as food and also for making malt, from which are prepared beer, porter, and whisky. Barley has been known and cultivated from remote antiquity, and beer was made from it among the Egyptians. Excellent barley is produced in Britain. The species principally cultivated are *Hordœum distichum*, two-rowed barley; *H. vulgäre*, four-rowed barley; and *H. hexastichum*, six-rowed, of which the small variety is the sacred barley of the ancients. The varieties of the four and six rowed species are generally coarser than those of the two-rowed, and adapted for a poorer soil and more exposed situation. Some of these are called *bere* or *bigg*. In Britain barley occupies about the same area as wheat, but in N. America the extent of it as a crop is comparatively small, being in Canada, however, relatively greater than in the States, and the Canadian barley is of very high quality. Barley is better adapted for cold climates than any other grain, and some of the coarser varieties are cultivated where no other cereal can be grown. Some species of the genus, three of which are natives of Britain, are mere grasses. *Pot* or *Scotch barley* is the grain deprived of the husk in a mill. *Pearl barley* is the grain polished and rounded and deprived of husk and pellicle. *Patent barley* is the farina obtained by grinding pearl barley. *Barley-water*, a decoction of pearl barley, is used in medicine as possessing emollient, diluent, and expectorant qualities.

Barley-sugar, pure sugar melted and allowed to solidify into an amorphous mass without crystallizing.

Bar'low, JOEL, an American poet and diplomatist; born 1754. After an active and

changeable life as chaplain, lawyer, editor, land-agent, lecturer, and consul, he went to Paris and acquired a fortune. On his return to America he was appointed minister plenipotentiary to France (1811), but died near Cracow in 1812 on his way to meet Napoleon. His principal poem, the *Columbiad*, dealing with American history from the time of Columbus, was published in 1807.

Barm. See *Yeast*.

Bar'mecides (-sīdz), a distinguished Persian family, whose virtues and splendour form a favourite subject with Mohammedan poets and historians. Two eminent members of this family were Khaled-ben-Bar-mek, tutor of Haroun Alrashid; and his son Yahya, grand vizier of Haroun. The expression *Barmecides Feast*, meaning a visionary banquet or make-believe entertainment, originates from the Barber's story of his Sixth Brother in the *Arabian Nights' Entertainments*.

Bar'men, a German city on the Wupper, in the Prussian Rhine Province, government of Düsseldorf, and forming a continuation of the town of Elberfeld, in the valley of Barmen. It has extensive ribbon and other textile manufactures; also dye-works, manufactures of chemicals, metal wares, buttons, yarns, iron, machines, pianos, organs, soap, &c. Pop. 103,068.

Bar'nabas, the surname given by the apostles to Joses, a fellow-labourer of Paul, and, like him, ranked as an apostle. He is said to have founded at Antioch the first Christian community, to have been first bishop of Milan, and to have suffered martyrdom at Cyprus. His festival is held on the 11th June.

Barnabas, SAINT, EPISTLE OF, an epistle in twenty-one chapters unanimously ascribed to Barnabas by early Christian writers, but without any support of internal evidence. It was probably written between 119 and 126 B.C., by one who was not a Jew, and under the influence of Alexandrian Judaistic thought.

Barnabites, an order of monks founded in Milan in 1530 and named after the Milan church of St. Barnabas which was allotted them to preach in. A few monasteries of the order still exist in France and Italy.

Bar'nacle, the name of a family (*Lepadidæ*) of marine crustaceous animals, order Cirripedia. They are enveloped by a mantle and shell, composed of five principal valves and several smaller pieces, joined together

by a membrane attached to their circumference; and they are furnished with a long, flexible, fleshy stalk or peduncle, provided with muscles, by which they attach themselves to ships' bottoms, submerged timber, &c. They feed on small marine animals, brought within their reach by the water and secured by their tentacula. Some of the larger species are edible. According to an old fable these animals produced barnacle geese (see next art.).



Barnacle (*Lepas anatifera*).

Barnacle Goose (*Anser Bernicla* or *leucopsis*), a summer visitant of the northern seas, in size rather smaller than the common wild goose, and having the forehead and cheeks white, the upper body and neck black. A fable asserts that the crustaceans called barnacles (see preceding article) changed into geese, and various theories have been framed to account for its origin. Max Müller supposes the geese were originally called *Hiberniculae* or Irish geese, and that barnacle is a corruption of this; but the resemblance of a barnacle to a goose hanging by the head may account for it. The Brent Goose is also sometimes called the Barnacle Goose, but the two should be discriminated.

Barnard-Castle, a town, England, county Durham, giving name to a parl. div. of the county. There are a large thread-mill and carpet manufactories; the Bowes Museum and Art Gallery, endowed by private munificence, and costing over £80,000; and the Northern Counties School, richly endowed. The castle was originally built about 1178 by Bernard Baliol, grandfather of John Baliol. Pop. 1891, 4341.

Barnaul', town of Siberia, government of Tomsk, on the Barnaulski, near its influx into the Obi. The town is of wood but well built, with museum, observatory, &c. It is an important mining centre for lead, copper, and silver, has 120 furnaces, a copper mint, kilns, and factories. Pop. 14,000.

Barnave (bâr-näv), ANTOINE-PIERRE-JOSEPH-MARIE, a distinguished French revolutionist, who successfully maintained against Mirabeau the right of the National Assembly as against that of the king to declare for peace or war, but afterwards asserted the inviolability of the king's person, was impeached, condemned, and guillotined. Born 1761, died 1793.

Barnes (bärnz), ALBERT, theologian, born

in the state of New York, 1798. In 1825 he was ordained pastor of the Presbyterian Church of Morristown, New Jersey, and from 1830 till his death in 1870 had charge of the first Presbyterian Church in Philadelphia. He is chiefly known by his Notes on the New Testament, and Notes on the Old Testament.

Barnes, WILLIAM, English dialect poet and philologist, born in Dorsetshire in 1800, died 1886. Of humble birth, he first entered a solicitor's office, then taught a school in Dorchester, and having taken orders became rector of Winterbourne Came in his native county and died there. He acquired a knowledge of many languages, and published works on Anglo-Saxon and English, as *An Anglo-Saxon Delectus*, *A Philological Grammar*, grounded upon English, *Grammar and Glossary of the Dorset Dialect*, &c., but is best known by his *Poems of Rural Life in the Dorset dialect*, and *Rural Poems in common English*.

Bar'net, a town of England, in Herts, 11 miles from London, where was fought in 1471 a battle between the Yorkists and Lancastrians, resulting in the defeat of the latter and the death of Warwick, Edward IV. being thus established on the throne.

Barneveldt (bär'ne-velt), JOHN VAN OLDEN, grand pensionary of Holland during the struggle with Philip II. of Spain; born in 1549. After the assassination of William of Orange, and the conquest of the south provinces by the Spaniards under Parma, he headed the embassy to secure English aid. Finding, however, that the Earl of Leicester proved a worse than useless ally, he secured the elevation of the young Maurice of Nassau to the post of stadtholder, at the same time by his own wise administration doing much to restore the prosperity of the state. After serving as ambassador to France and England, he succeeded in 1607 in obtaining from Spain a recognition of the independence of the States, and two years later in concluding with her the twelve years' truce. Maurice, ambitious of absolute rule and jealous of the influence of Barneveldt, was interested in the continuance of the war, and lost no opportunity of hostile action against the great statesman. In this he was aided by the strongly-marked theologic division in the state between the Gomarites (the Calvinistic and popular party) and the Arminians, of whom Barneveldt was a supporter. Maurice, who had thrown in his lot with the Gomarites, encouraged the

idea that the Arminians were the friends of Spain, and procured the assembly of a synod at Dort (1618) which violently condemned them. Barneveldt and his friends Grotius and Hoogerbeets were arrested, and subjected to a mock trial; and Barneveldt, to whom the country owed its political existence and the commons their retention of legislative power, was beheaded on May 13th, 1619. His sons four years later attempted to avenge his death; one was beheaded, the other escaped to Spain.

Barns'ley, a municipal bor. of England, W. Riding of Yorkshire, giving name to a parl. division of the co. Its staple industries are the manufacture of linens, iron, and steel, and there are numerous collieries in the neighbourhood. Pop. 1891, 35,427.

Barn'stapse, a municipal borough in England, county of Devon, giving name to a parl. division of the co., on the right bank of the Taw, where it receives the Yeo; manufactures of lace, paper, pottery, furniture, toys and turnery, and leather. Pop. 13,058.

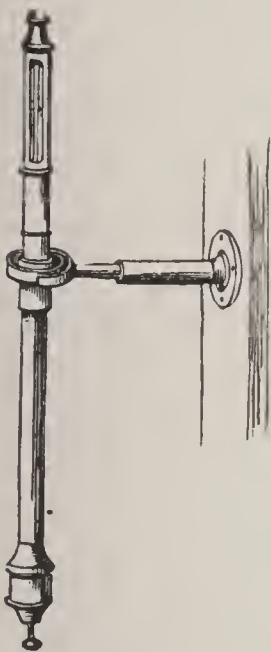
Baroach. See *Broach*.

Baro'da, a non-tributary state, but subordinate to the Indian government; situated in the north of the Bombay presidency. It consists of a number of detached territories in the province of Guzerat, and is generally level, fertile, and well cultivated, producing luxuriant crops of grain, cotton, tobacco, opium, sugar-cane, and oil-seeds. There is a famous breed of large white oxen used as draught cattle. Area, 8570 sq. miles; pop. (1881), 2,185,005. The ruler is called the *Gaekwár*. The dissensions of the Baroda family have more than once called for British intervention, and in 1875 the ruling Gaekwár was tried and deposed in connection with the charge of attempt to poison the British resident.—BARODA, the capital, is the third city in the Bombay presidency. It consists of the city proper within the walls and the suburbs without, and is largely composed of poor and crowded houses, but has also some fine buildings, and is noted for its Hindu temples kept up by the state. Pop. 106,512 (including troops in the adjoining cantonment).

Barom'eter, an instrument for measuring the weight or pressure of the atmosphere and thus determining changes in the weather, the height of mountains, and other phenomena. It had its origin about the middle of the seventeenth century in an experiment of Torricelli, an Italian, who found that if a glass tube about 3 feet in length, open at

BAROMETER.

one end only, and filled with mercury, were placed vertically with the open end in a cup of the same fluid metal, a portion of the mercury descended into the cup, leaving a



Marine Barometer.



Common Upright Barometer.

column only about 30 inches in height in the tube. He inferred, therefore, that the atmospheric pressure on the surface of the mercury in the cup forced it up the tube to the height of 30 inches, and that this was so because the weight of a column of air from the cup to the top of the atmosphere was only equal to that of a column of mercury of the same base and 30 inches high. Pascal confirmed the conclusion in 1645; six years afterwards it was found by Perrier that the height of the mercury in the Torricellian tube varied with the weather; and, in 1665, Boyle proposed to use the instrument to measure the height of mountains.

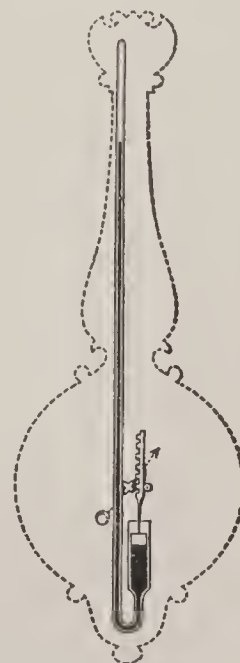
The common or *cistern* barometer, which is a modification of the Torricellian tube, consists of a glass tube 33 inches in length and about one-third of an inch in diameter, hermetically sealed at the top, and having the lower end resting in a small vessel containing mercury, or bent upwards and terminating in a glass bulb partly occupied by the mercury and open to the atmosphere. The tube is first filled with purified mercury, and then inverted, and there is affixed to it a scale to mark the height of the mercurial column, which comparatively seldom rises above 31 or sinks below 28 inches. In general the rising of the mercury presages fair

weather, and its falling the contrary, a great and sudden fall being the usual presage of a storm. The weather-points on the ordinary barometric scale are as follows:—At 28 inches, stormy weather; $28\frac{1}{2}$, much rain or snow; 29, rain or snow; $29\frac{1}{2}$, changeable; 30, fair or frost; $30\frac{1}{2}$, settled fair or frost; 31, very dry weather or hard frost. Certain attendant signs, however, have also to be noted: thus, when fair or foul weather follows almost immediately upon the rise or fall of the mercury, the change is usually of short duration; while if the change of weather be delayed for some days after the variation in the mercury, it is usually of long continuance. The direction of the wind has also to be taken into account.

The *siphon* barometer consists of a bent tube, generally of uniform bore, having two unequal legs, the longer closed, the shorter open. A sufficient quantity of mercury having been introduced to fill the longer leg, the instrument is set upright, and the mercury takes such a position that the difference of the levels in the two legs represents the pressure of the atmosphere. In the best siphon barometers there are two scales, one for each leg, the divisions on one being reckoned upwards, and on the other downwards from an intermediate zero point, so that the sum of the two readings is the



Siphon Barometer.



Wheel Barometer.

difference of levels of the mercury in the two branches.

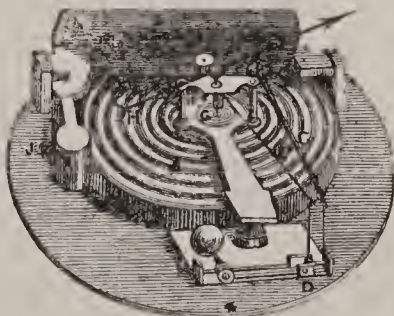
The *wheel* barometer is the one that is most commonly used for domestic purposes. It is far from being accurate, but it is often

BAROMETER — BARONET.

preferred for ordinary use on account of the greater range of its scale, by which small differences in the height of the column of mercury are more easily observed. It usually consists of a siphon barometer, having a float resting on the surface of the mercury in the open branch, a thread attached to the float passing over a pulley, and having a weight as a counterpoise to the float at its extremity. As the mercury rises and falls the thread and weight turn the pulley, which again moves the index of the dial.

The *mountain* barometer is a portable mercurial barometer with a tripod support and a long scale for measuring the altitude of mountains. To prevent breakage, through the oscillations of such a heavy liquid as mercury, it is usually carried inverted, or it is furnished with a movable basin and a screw, by means of which the mercury may be forced up to the top of the tube. For delicate operations, such as the measurement of altitudes, the scale of the barometer is furnished with a nonius or vernier, which greatly increases the minuteness and accuracy of the scale. For the rough estimate of altitudes the following rule is sufficient:—As the sum of the heights of the mercury at the bottom and top of the mountain is to their difference, so is 52,000 to the height to be measured, in feet. (See also *Heights, Measurement of*.) In exact barometric observations two corrections require to be made, one for the depression of the mercury in the tube by capillary attraction, the other for temperature, which increases or diminishes the bulk of the mercury. In regard to the measurement of heights the general rule is to subtract the ten-thousandth part of the observed altitude for every degree of Fahrenheit above 32°.

In the *aneroid* barometer, as its name implies (Gr. *a*, not, *nēros*, liquid), no fluid is employed, the action being dependent upon the susceptibility to atmospheric pressure shown by a flat circular metallic chamber from which the air has been partially ex-



Aneroid Barometer.

hausted, and which has a flexible top and bottom of corrugated metal plate. By an ingenious arrangement of springs and levers the depression or elevation of the surface of the box is registered by an index on the dial, by which means it is also greatly magnified, being given in inches to correspond with the mercurial barometer. Aneroids are, however, generally less reliable than mercurial barometers, with which they should be frequently compared. The cut shows an aneroid without its case. A is the partially exhausted chamber, B a strong spring connected with its top and with the base-plate, C a lever from B connected through the bent lever D with the chain E coiled round F, and always kept tense by the spiral spring G. As the top of A rises or falls its motion is transmitted by B to the levers and chain so as to move the needle H. At J is seen the tube through which the air is drawn from A.

Bar'on, originally, in the feudal system, the vassal or immediate tenant of any superior; but the term was afterwards restricted to the king's barons, and again to the greater of these only, who attended the Great Council, or who, at a later date, were summoned by writ to Parliament. It was the second rank of nobility, until dukes and marquises were introduced and placed above the earls, and viscounts also set above the barons, who, therefore, now hold the lowest rank in the British peerage. The present barons are of three classes: (1) barons by prescription, whose ancestors have immemorially sat in the Upper House; (2) by patent; (3) by tenure, *i.e.* holding the title as annexed to land. The coronet is a plain gold circle with six balls or large pearls on its edge, the connected cap being of crimson velvet.—*Baron and feme*, a term used for husband and wife in the English law.—*Baron of beef*, two sirloins not cut asunder.

Bar'onet, a hereditary dignity in Great Britain and Ireland, next in rank to the peerage, originally instituted by James I. in 1611, nominally to promote the colonization and defence of Ulster, each baronet, on his creation, being then obliged to pay into the treasury a sum of £1095, exclusive of fees. Baronets in Ireland were instituted in 1620, and in Scotland in 1625, the latter being called Baronets of Scotland and Nova Scotia, because their creation was originally intended to further the colonization of Nova Scotia. But the baronets of Scotland and of Ireland have been baronets of the United Kingdom if created since 1707 and 1801 respectively. A baronet has the title of 'Sir' prefixed to his Christian and surname,

and his wife is 'Lady' so-and-so. Baronets rank before all knights. They have as their badge a 'bloody hand' (the arms of Ulster), that is, a left hand, erect and open, cut off at the wrist, and red in colour.

Baro'nus, or **BARONIO**, **CÆSAR**, Italian ecclesiastical historian, born 1538; educated at Naples; in 1557 went to Rome; was one of the first pupils of St. Philip of Neri, and member of the oratory founded by him; afterwards cardinal and librarian of the Vatican Library. He owed these dignities to the services which he rendered the church by his *Ecclesiastical Annals*, comprising valuable documents from the papal archives, on which he laboured from the year 1580 until his death, June 30, 1607. They were continued, though with less power, by other writers, of whom Raynaldi takes the first rank.

Barons' War, the war carried on for several years by Simon de Montfort and other barons of Henry III. against the king, beginning in 1263.

Barony, a manor or landed estate under a baron, who formerly had certain rights of jurisdiction in his barony and could hold special courts. In Ireland baronies are still the chief subdivisions of the counties.

Barouche (ba-rösh'), a four-wheeled carriage with a falling top and two inside seats in which four persons can sit, two fronting two.

Barque (bärk), a three-masted vessel of which the foremast and mainmast are square-rigged, but the mizzenmast has fore-and-aft sails only.

Barquesimeto (bär-kā-sē-mā'tō), a city in the north of Venezuela, capital of the province of Barquesimeto. Population about 12,000.

Bar'ra, or **BAR**, a small kingdom in Africa, near the mouth of the Gambia. The Mandingoes, who form a considerable part of the inhabitants, are Mohammedans and the most civilized people on the Gambia. Pop. 200,000. The coast here belongs to Britain.

Barra, an island of the Outer Hebrides, w. coast of Scotland, belonging to Inverness-shire; 8 miles long and from 2 to 5 broad, of irregular outline, with rocky coasts, surface hilly but furnishing excellent pasture. On the w. coast the Atlantic, beating with all its force, has hollowed out vast caves and fissures. Large herds of cattle and flocks of sheep are reared on the island. The coasts of this and adjacent is-

lands abound with fish, and fishing is an important industry. Pop. 1887.

Barra, a town about 3 miles east of Naples. Pop. 8464.

Barracan', strictly, a thick strong stuff made in Persia and Armenia of camel's hair, but the name has been applied to various wool, flax, and cotton fabrics.

Bar'rack (Spanish *barraca*), originally a small cabin or hut for troops, but now applied to the permanent buildings in which troops are lodged. Despite the obvious evils of the quartering system, the introduction of barracks met with considerable opposition in the British Parliament as dangerous to liberty, by estranging the soldier from the citizen, and fitting him to become a tool of despotism.

Barrackpur (-pör'), a town and military cantonment, Hindustan, on the left bank of the Hooghly, 10 miles N.N.E. of Calcutta. The suburban residence of the viceroy is in Barrackpur Park. Pop. 17,702.

Barracoon', a negro barrack or slave depot, formerly plentiful on the west coast of Africa, in Cuba, Brazil, &c.

Barrafran'ca, a town of Sicily, prov. Caltanissetta. Pop. 9052.

Barramun'da. See *Ceratodus*.

Barranquilla (bär-rän-kē'yā), a port of S. America, in Colombia, on a branch of the river Magdalena, near its entrance into the Caribbean Sea, connected by rail with the seaport Sabanilla. Pop. 20,000.

Barras (bä-rä), **PAUL FRANÇOIS JEAN NICHOLAS, COMTE DE**, member of the French national convention and of the executive directory, born in Provence 1755, died 1829. After serving in the army in India and Africa, he joined the revolutionary party and was a deputy in the tiers-état. He took part in the attack upon the Bastille and upon the Tuileries, and voted for the death of Louis XVI. In the subsequent events he displeased Robespierre, and on this account joined the members of the committee, who foresaw danger awaiting them, and being intrusted with the chief command of the forces of his party he made himself master of Robespierre. On Feb. 4, 1795, he was elected president of the convention, and on Oct. 5, when the troops of the sections which favoured the royal cause approached, Barras for a second time received the chief command of the forces of the convention. On this occasion he employed General Bonaparte, for whom he procured the chief command of the army of the interior, and after-

wards the command of the army in Italy. From the events of the 18th Fructidor (Sept. 4, 1797) he governed absolutely until the 13th June, 1799, when Siéyès entered the directory, and in alliance with Bonaparte procured his downfall in the revolution of the 18th Brumaire (Nov. 9, 1799). He afterwards resided at Brussels, Marseilles, Rome, and Montpellier under surveillance, returning to Paris only after the restoration of the Bourbons.

Bar'ratry, in commerce, any fraud committed by the master or mariners of a ship, whereby the owners, freighters, or insurers are injured; as by evading foreign port-duties; deviation from the usual course of the voyage, by the captain, for his own private purposes; trading with an enemy, whereby the ship is exposed to seizure; wilful violation of a blockade; wilful resistance of search by a belligerent vessel, where the right of search is legally exercised; fraudulent negligence; embezzlement of any part of the cargo, &c.

Barratry, COMMON, in law, the stirring up of lawsuits and quarrels between other persons, the party guilty of this offence being indictable as a *common barrator* or *barretor*. The commencing of suits in the name of a fictitious plaintiff is common barratry.

Barre, Washington co., Vt., the seat of Goddard Seminary. Pop. 1890, 6812.

Barrel, a well-known variety of wooden vessel; also used as a definite measure and weight. A barrel of beer is 36 gals., of flour 196 lbs., of beef or pork 200 lbs.

Barrel-organ, a musical instrument usually carried by street musicians, in which a barrel studded with pegs or staples, when turned round, opens a series of valves to admit air to a set of pipes, or acts upon wire strings like those of the piano, thus producing a fixed series of tunes.

Barren Grounds, a large tract in the North-west Territories of Canada, extending northwards from Churchill River to the Arctic Ocean between Great Bear and Great Slave Lake and Hudson's Bay. It largely consists of swamps, lakes, and bare rock.

Barrie, Ontario, Canada, on the Meaford Branch of Grand Trunk Railway. Pop. 1891, 5550.

Barrhead', a town, Scotland, county Renfrew, on the Lavern, 7 miles s.w. of Glasgow; chief industries: printing of cottons, the spinning of cotton yarn, dyeing, bleaching, iron and brass founding. Pop. 6566.

Bar'ricade, an obstruction hastily raised to defend a narrow passage, such as a street, defile, or bridge. When beams, chains, chevaux-de-frise and prepared materials are wanting, wagons, barrows, casks, chests, branches of trees, paving-stones, &c., may be used for the purpose. They have been frequently used in popular outbursts, especially in Paris, though their accessibility to attack by breaking through the houses of adjoining streets makes a prolonged tenure against troops impossible.

Barrier Reef, a coral reef which extends for 1260 miles off the N.E. coast of Australia, at a distance from land ranging from 10 to 100 miles. In sailing from Sydney through Torres Straits vessels have the choice of the inner and outer routes; the former, though narrow, gives a channel of about 12 fathoms deep throughout, and protected from the sea by the reefs themselves; the outer channel is less accurately surveyed and still dangerous.

Barrier Treaty, the treaty (1718) by which, when the Spanish Netherlands were ceded to Austria, the Dutch secured the right to garrison several border fortresses of the country at the expense of Austria, to serve as a barrier against France. It was declared void in 1781 by Joseph II.

Bar'rington, DAINES, son of Viscount Barrington, lawyer, antiquarian, and naturalist; born 1727, died 1800. He wrote many papers for the Royal Society and the Society of Antiquaries; published some separate works, and was a correspondent of White of Selborne.

Bar'rister, in England or Ireland, an advocate or pleader, who has been admitted by one of the Inns of Court, viz. the Inner Temple, Middle Temple, Lincoln's Inn, or Gray's Inn, to plead at the bar. It is they who speak before all the higher courts, being instructed in regard to the case they have in hand by means of the *brief* which they receive from the solicitor who may happen to engage their services, and which has a certain fee endorsed upon it as the sum to be paid for the barrister's services in the case. Before a student can be admitted to the bar he must have been a member of one of those societies, and have kept twelve terms there. The examinations, which had dwindled into mere forms, have been revived and made more stringent. Barristers are sometimes called *utter* or *outer barristers*, to distinguish them from the queen's (king's) counsel, who sit within the bar in the courts and are dis-

tinguished by a silk gown. Barristers are also spoken of as *counsel*, as in the phrase *opinion of counsel*, that is, a written opinion on a case obtained from a barrister before whom the facts have been laid. All judges are selected from the barristers. A barrister cannot maintain an action for his fees, which are considered purely honorary. A *revising barrister* is a barrister appointed to revise the list of persons in any locality who have a vote for a member of Parliament. The term corresponding to barrister is in Scotland *advocate*, in the United States *counsellor-at-law*; but the position of the latter is not quite the same.

Bar'ros, JOÃO DE, Portuguese historian; born 1496. He was attached to the court of King Emmanuel, who, after the publication in 1520 of Barros' Romance, the Emperor Clarimond, urged him to undertake a history of the Portuguese in India, which appeared thirty-two years later. King John III. appointed Barros governor of the Portuguese settlements in Guinea, and general agent for these colonies, further presenting him in 1530 with the province of Maranhão in Brazil, for the purpose of colonization. For his losses by the last enterprise the king indemnified him, and he died in retirement in 1570. Besides his standard work, *Asia Portuguesa*, he wrote a moral dialogue on compromise, and the first Portuguese Grammar.

Barro'sa, a village, Spain, near the s.w. coast of Andalusia, near which General Graham, when abandoned by the Spaniards, defeated a superior French force in 1811.

Bar'row, a river in the south-east of Ireland, province Leinster, rising on the borders of the King's and Queen's Counties, and after a southerly course joining the Suir in forming Waterford harbour. It is next in importance to the Shannon, and is navigable for vessels of 200 tons for 25 miles above the sea.

Bar'row, ISAAC, an eminent English mathematician and divine, born in London in 1630, studied at the Charterhouse and at Trinity College, Cambridge, of which he became a fellow in 1649. After a course of medical studies he turned to divinity, mathematics, and astronomy, graduated anew at Oxford in 1652, and, failing to obtain the Cambridge Greek professorship, went abroad. In 1659 he was ordained; in 1660 elected Greek professor at Cambridge; in 1662 professor of geometry in Gresham College; and in 1663 Lucasian

professor of mathematics at Cambridge, a post which he resigned to Newton in 1669. In 1670 he was created D.D., in 1672 master of Trinity College, and in 1675 vice-chancellor of Cambridge University. He died in 1677. His principal mathematical works (written in Latin) were (an edition of which was edited by Whewell): *Euclidis Elementa*, 1655; *Euclidis Data*, 1657; *Mathematicæ Lectiones*, 1664-66; *Lectiones Opticæ*, 1669; *Lectiones Geometricæ*, 1670; *Archimedis Opera*; *Apollonii Conicorum lib. iv.*; *Theodosii Spherica*, 1675. All his English works, which are theological, were left in MS., and published by Dr. Tillotson in 1685. As a mathematician Barrow was deemed inferior only to Newton.

Barrow, SIR JOHN, BART., geographer and man of letters, born in 1764 in Lancashire. At the age of sixteen he went in a whaler to Greenland; was subsequently teacher of mathematics in a school at Greenwich; and was sent with Lord Macartney in his embassy to China in 1792, to take charge of philosophical instruments for presentation to the Chinese emperor. His account of this journey was of great value, and not less so was the account of his travels in South Africa, whither he went in 1797 as secretary to Macartney. In 1804 he was appointed second secretary to the admiralty, a post occupied by him for forty years. In 1835 he was made a baronet; and he died in 1848, three years after his retirement. Besides the accounts of his own travels he published lives of Earl Macartney, Lord Anson, Lord Howe, and Drake; *Voyages of Discovery and Research within the Arctic Regions*; an autobiography of himself written at the age of eighty-three, &c.

Bar'row-in-Fur'ness, a seaport and parliamentary borough of Lancashire, in the district of Furness, opposite the island of Walney, a town that has increased from a fishing hamlet with 100 inhabitants in 1848 to a town of 51,712 inhabitants in 1881. Its prosperity is due to the mines of red hematite iron-ore which abounds in the district, and to the railway rendering its excellent natural harbour available. It has several large docks; besides graving-docks, a floating-dock capable of receiving vessels of 3000 tons, a large timber pond, &c. There is an extensive trade in timber, cattle, grain, and flour; and iron-ore and pig-iron are largely shipped. It has numerous blast-furnaces, and one of the largest Bessemer-steel works in the world. Besides

iron-works a large business is done in ship-building, the making of railway wagons and rolling stock, ropes, sails, bricks, &c. A town-hall erected at a cost of £60,000 was opened in 1887.

Bar'rows, mounds of earth or stones raised to mark the resting-place of the dead, and distinguished, according to their shape, as *long, bowl, bell, cone, broad* barrows. The practice of barrow-burial is of unknown antiquity and almost universal, barrows being found all over Europe, in Northern Africa, Asia Minor, Afghanistan, Western India, and in America. In the earliest barrows the inclosed bodies were simply laid upon the ground, with stone or bone implements and weapons beside them. In barrows of later date the remains are generally inclosed in a stone cist. Frequently cremation preceded the erection of the barrow, the ashes being inclosed in

an urn or cist. A detailed description of an ancient barrow-burial is given in the Anglo-Saxon poem *Beowulf*, and the accounts of the obsequies of Hector and Achilles in the *Iliad* and *Odyssey* are well known.

Barrow Strait, the connecting channel between Lancaster Sound and Baffin's Bay on the E. and the Polar Ocean on the W. Of great depth, with rocky and rugged shores. Named after Sir John Barrow.

Bar'ry, SIR CHARLES, an English architect, born in London 1795. After executing numerous important buildings, such as the Reform Club-house, London, St. Edward's School, Birmingham, &c., he was appointed architect of the new Houses of Parliament at Westminster, a noble pile, with the execution of which he was occupied for more than twenty-four years. He was knighted in 1852, and died suddenly in 1860. His son, EDWARD MIDDLETON, R. A.

(1830–1880), was also a distinguished architect, and produced many important buildings, though he was disappointed in regard to his designs for the Albert Memorial, National Gallery, and New Law Courts.

Barry, COMTESSE DU. See *Du Barry*.

Barry, JAMES, a painter and writer on art, born at Cork 1741. studied abroad with the aid of Burke; was elected Royal Academician on his return; and worked seven years on the paintings for the hall of the Society for the Encouragement of the Arts. In 1773 he published his *Inquiry into the Real and Imaginary Obstructions to the Increase of the Arts in England*; and in 1782 was elected professor of painting to the Academy. He was expelled in 1797 on the ground of his authorship of the *Letter to the Society of Dilettanti*. His chief painting was his *Victors at Olym-*



Bowl Barrow



Long Barrow.



Twin Barrow.

pia. He died in 1806.

Barry Cornwall, the assumed name of Bryan Waller Procter.

Bar'sabas, son of Alpheus, brother of James the Less and of Jude, and one of the candidates for the apostolical office left vacant by Judas Iscariot. According to tradition he was afterwards bishop of Eleutheropolis, near Jerusalem, and suffered martyrdom. Another Barsabas, surnamed Judas, supposed to be the brother of the above, is mentioned in the Acts as a companion of Paul and Barnabas at Antioch. He is supposed to have died in Jerusalem at a very advanced age.

Bar-shot, a double-headed shot consisting of two pieces connected by a bar.

Bar-sur-Aube (bâr-sûr-ôb), an ancient town, France, dep. Aube, where, in 1814, a hotly-contested action was fought between Napoleon and the allies. Pop. 5000.

Bart, *Barth*, or *Baert* (bärt), JEAN, a famous French sailor, born at Dunkirk, 1650, the son of a poor fisherman. He became captain of a privateer, and after some brilliant exploits was appointed captain in the royal navy. In recognition of his further services he was made commodore, subsequently receiving letters of nobility. Brusque, if not vulgar in manner, and ridiculed by the court for his indifference to ceremony, he made the navy of the nation everywhere respected, and furnished some of the most striking chapters in the romance of naval warfare. After the peace of Ryswick he lived quietly at Dunkirk, and died there while equipping a fleet to take part in the war of the Spanish Succession, 1702.

Bartas (bär-tä), GUILLAUME DE SALLUSTE DU, a French poet, termed 'the divine' by contemporary English writers; born 1544. Principal work, *La Sepmaine* (The Week), a poem on the creation, translated into English by Sylvester. Died of wounds received at Ivry, 1590.

Bartfeld (bärt'felt), an old town, Hungary, county of Saros, on the Tepl, with mineral springs in the neighbourhood. Pop. 5303.

Barth (bärt), HEINRICH, African traveller, born at Hamburg 1821, died in 1865. He graduated at the University of Berlin as Ph.D. in 1844; and set out in 1845 to explore all the countries bordering on the Mediterranean. The first volume of his *Wanderungen durch die Küstenländer des Mittelmeeres* was published in 1849, in which year he was invited by the English government to join Dr. Overweg in accompanying Richardson's expedition to Central Africa. The expedition set out from Tripoli in February, 1850, and in spite of the death both of Richardson and Overweg, Barth did not return to Tripoli till the autumn of 1855. His explorations, which extended over an area of about 2,000,000 square miles, determined the course of the Niger and the true nature of the Sahara. The English account of it was entitled *Travels and Discoveries in North and Central Africa* (5 vols. 1857-58). An important work on the African languages was left unfinished.

Barth, JEAN. See *Bart*.

Barthélemy (bär-tāl-mē), JEAN JACQUES, French author, born 1716. He was educated under the Jesuits, for holy orders, but declined all offers of clerical promotion

above the rank of *Abbé*. He gained considerable repute as a worker in philology and archæology; and after his appointment as director of the Royal Cabinet of Medals, in 1753, spent some time travelling in Italy collecting medals and antiquities. His best-known work, not inaptly characterized by himself as an unwieldy compilation, was the *Travels of the Younger Anacharsis in Greece*. It was very popular and was translated into various tongues. Though taking no part in the revolution he was arrested on a charge of aristocracy in 1793, but was set at liberty, and subsequently offered the post of librarian of the National Library. He died in 1795.

Barthélmy-Saint-Hilaire (bär-tāl-mē-san-tē-lār), JULES, French scholar and statesman, born 1805, died in 1887. He was professor of Greek and Latin philosophy in the College of France, but resigned the chair after the coup d'état of 1852 and refused to take the oath; was reappointed 1862; in 1869 was returned to the Corps Législatif; after the revolution was a member of the National Assembly; was elected senator for life in 1875. He published a translation of Aristotle, and works on Buddhism, Mohammed and Mohammedanism, the Vedas, &c.

Barthez (bär-tā), PAUL JOSEPH, an eminent French physician, born at Montpellier 1734, died 1806. At Montpellier he founded a medical school, which acquired a reputation throughout all Europe. Having settled in Paris, he was appointed by the king consulting physician, and by the Duke of Orleans his first physician. The revolution deprived him of the greatest part of his fortune, and drove him from Paris, but Napoleon brought him forth again, and loaded him in his advanced age with dignities. Among his numerous writings may be mentioned *Nouvelle Mécanique des Mouvements de l'Homme et des Animaux*; *Traitement des Maladies Goutteuses*; *Consultation de Médecine*, &c.

Bartholdi (bär-tol'dē), AUGUSTE, French sculptor, born 1833; best known as the artist of the colossal statue of Liberty now overlooking the harbour of New York.

Bartholin (bär'to-lin), KASPAR, Swedish writer, born 1585, died 1630. He studied medicine, philosophy, and theology; was made Doctor of Medicine at Basel in 1610, rector of the University of Copenhagen 1618, and professor of theology 1624. His *Institutiones Anatomicæ* was for long a

standard text-book in the universities. His son, THOMAS, born at Copenhagen 1616, died 1680, was equally celebrated as a philologist, naturalist, and physician. He was professor of anatomy at Copenhagen, 1648; physician to the king, Christian V., in 1670; and councillor of state, 1675. His sons, KASPAR (born 1654, died 1704) and THOMAS (born 1659, died 1690) were also highly distinguished—the first as an anatomist, the other as an archæologist.

Barthol'omew, the apostle, is probably the same person as *Nathanael*, mentioned in the Gospel of St. John as an upright Israelite and one of the first disciples of Jesus. He is said to have taught Christianity in the south of Arabia, into which, according to Eusebius, he carried the Gospel of St. Matthew in the Hebrew language; and to have suffered martyrdom. The ancient church had an apocryphal gospel bearing his name, of which nothing has been preserved. A festival is held to his memory on 24th August.

Bartholomew, St., an island, one of the West Indies, in the Leeward group, belonging to France, being transferred by Sweden in 1878, about 24 miles in circumference. It produces some tobacco, sugar, cotton, indigo, &c. Pop. 2374. The only town is Gustavia.

Bartholomew Fair, a celebrated fair, established in the reign of Henry I., formerly held in West Smithfield, London, on St. Bartholomew's Day (Aug. 24, o.s.), but abolished since 1855.

Bartholomew's Day, St., a feast of the Church of Rome, celebrated (August 24) in honour of St. Bartholomew. What is known as the MASSACRE OF ST. BARTHOLOMEW was the slaughter of the French Protestants, which began on 24th August, 1572, by secret orders from Charles IX., at the instigation of his mother, Catharine de Medici, and in which, according to Sully, 70,000 Huguenots, including women and children, were murdered throughout the country. During the minority of Charles and the regency of his mother a long war raged in France between the Catholics and Huguenots, the leaders of the latter being the Prince of Condé and Admiral Coligny. In 1570 overtures were made by the court to the Huguenots, which resulted in a treaty of peace. This treaty blinded the chiefs of the Huguenots, particularly the Admiral Coligny, who was wearied with civil war. The king appeared to have entirely disen-

gaged himself from the influence of the Guises and his mother; he invited Coligny to his court, and honoured him as a father. The most artful means were employed to increase this delusion. The sister of the king was married to the Prince de Béarn (Aug. 18, 1572) in order to allure the most distinguished Huguenots to Paris. On Aug. 22 a shot from a window wounded the admiral. The king hastened to visit him, and swore to punish the author of the villainy; but on the same day he was induced by his mother to believe that the admiral had designs on his life. 'God's death!' he exclaimed; 'kill the admiral; and not only him, but all the Huguenots; let none remain to disturb us.' The following night Catharine held the bloody council, which fixed the execution for the night of St. Bartholomew, August 24, 1572. After the assassination of Coligny a bell from the tower of the royal palace at midnight gave to the assembled companies of burghers the signal for the general massacre of the Huguenots. The Prince of Condé and the King of Navarre saved their lives by going to mass and pretending to embrace the Catholic religion. By the king's orders the massacre was extended throughout the whole kingdom; and the horrible slaughter continued for thirty days in almost all the provinces.

Bartholomew's Hospital, St., one of the great hospitals of London, formerly the priory of St. Bartholomew, and made an hospital by Henry VIII. in 1547. On an average 6000 patients are annually admitted to the hospital, while about 100,000 out-patients are relieved by it. A medical school is attached to it.

Bar'tizan, a small overhanging turret pierced with one or more apertures for archers, projecting generally from the angles on the top of a tower, or from the parapet, or elsewhere, as in a mediæval castle.

Bart'lett, WILLIAM HENRY, an English artist, born 1809, died on a voyage from Malta to Marseilles 1854. He travelled extensively abroad, and the illustrated works



Bartizan.

descriptive of the countries visited by him (Switzerland, the Bosphorus and the Danube, Syria and Palestine, Egypt, Canada, United States, &c.) obtained great success with the public, the engravings being from sketches by his own pencil.

Bartolini (bār-to-lē'nē), LORENZO, a celebrated Italian sculptor, born at Florence about 1778, died 1850. He studied and worked in Paris, and was patronized by Napoleon. On the fall of the empire he returned to Florence, where he continued to exercise his profession. Among his greater works may be mentioned his groups of Charity, and Hercules and Lycas, a colossal bust of Napoleon, and the beautiful monument in the cathedral of Lausanne, erected in memory of Lady Stratford Canning. Bartolini ranks next to Canova among modern Italian sculptors.

Bartolommeo (-mā'o), FRA. See *Baccio della Porta*.

Bartolozzi (-lot'sē), FRANCESCO, a distinguished engraver, born at Florence in 1725, or, according to others, in 1730, died at Lisbon 1813. In Venice, in Florence, and Milan he etched several pieces on sacred subjects, and then went to London, where he received great encouragement. After forty years' residence in London he went to Lisbon on the invitation of the Prince Regent of Portugal to take the superintendence of a school of engravers, and remained there till his death.

Bar'ton, ANDREW, one of Scotland's first great naval commanders; flourished during the reign of James IV., and belonged to a family which for two generations had produced able and successful seamen. In 1497 he commanded the escort which accompanied Perkin Warbeck from Scotland. After doing considerable damage to English shipping he was killed in an engagement with two ships which had been specially fitted out against him (1512).

Barton, BERNARD, known as the Quaker poet, born in London 1784, died 1849. In 1806 he removed to Woodbridge, in Suffolk, where he was long clerk in a bank. He published *Metrical Effusions* (1812); *Poems by an Amateur* (1818); *Poems* (1820); *Napoleon, and other Poems* (1822); *Poetic Vigils* (1824); *Devotional Verses* (1826); *A New-year's Eve, and other Poems* (1828); besides many contributions to the annuals and magazines. His poetry, though deficient in force, is pleasing, fluent, and graceful.

Barton, ELIZABETH, a country girl of Al-

dington, in Kent (commonly called the Holy Maid of Kent), who gained some notoriety in the reign of Henry VIII. She was subject to epileptic fits, and was persuaded by certain priests that she was a prophetess inspired by God. Among other things she prophesied that Henry, if he persisted in his purpose of divorce and second marriage, would not be king for seven months longer, and would die a shameful death, and be succeeded by Catherine's daughter. On arrest the imposture was confessed, and Barton and six others were executed May 5, 1534.

Barton-upon-Humber, a town of England, in Lincolnshire, on the Humber. It contains two old churches, one of which is an undoubted specimen of Anglo-Saxon architecture. Pop. 1891, 5226.

Bartsch (bārch), KARL FRIEDRICH, a German scholar, born in 1832, died in 1888, whose labours have been of immense service in elucidating the older literature and language of his native country as well as in the field of the Romance tongues. Among his publications were editions of the *Nibelungenlied*, *Walther Von der Vogelweide*, *Kudrun*, &c.; *Chrestomathie de l'ancien Français*; *Provençalisches Lesebuch*; translations of Burns, of Dante, &c.

Baru (ba-rö'), a woolly substance used for caulking ships, stuffing cushions, &c., found at the base of the leaves of an East India sago palm.

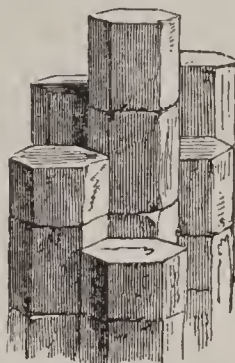
Baruch (bā'ruk; literally 'blessed'), a Hebrew scribe, friend and assistant to the prophet Jeremiah. At the captivity, after the destruction of Jerusalem, Jeremiah and Baruch were permitted to remain in Palestine, but were afterwards carried into Egypt, B.C. 588. His subsequent life is unknown. One of the apocryphal books bears the name of *I'aruch*. The Council of Trent gave it a place in the canon, but its authenticity was not admitted either by the ancient Jews or the early Christian fathers.

Barwood, a dyewood obtained from *Pterocarpus angolensis*, a tall tree of West Africa. It is chiefly used for giving orange-red dyes on cotton yarns. See *Camwood*.

Bary'ta, oxide of barium, called also *heavy earth*, from its being the heaviest of the earths, its specific gravity being 4.7. It is generally found in combination with sulphuric and carbonic acids, forming sulphate and carbonate of baryta, the former of which is called *heavy-spar*. Baryta is a gray powder, has a sharp, caustic, alkaline taste, and a strong affinity for water, and forms a

hydrate with that element. It forms white salts with the acids, all of which are poisonous except the sulphate. Several mixtures of sulphate of baryta and white-lead are manufactured, and are used as white pigments, or it may be used alone. Carbonate of baryta, which in the natural state is known as witherite, is also used as the base of certain colours. The nitrate is used in pyrotechny, in the preparation of green fireworks.

Basalt (ba-salt'), a well-known igneous rock occurring in the ancient trap and the recent volcanic series of rocks, but most abundantly in the former. It is a fine-grained heavy crystalline rock, consisting of felspar, augite, and magnetic iron, and sometimes contains a little olivine. Basalt



Basalt—Giant's Causeway.



Basalt—Lot's Wife, St. Helena.

is amorphous, columnar, tabular, or globular. The columnar form is straight or curved, perpendicular or inclined, sometimes nearly horizontal; the diameter of the columns

from 3 to 18 inches, sometimes with transverse semispherical joints, in which the convex part of one is inserted in the concavity of another; and the height from 5 feet to 150. The forms of the columns generally are pentagonal, hexagonal, or octagonal. When decomposed it is found also in round masses, either spherical or compressed and lenticular. These rounded masses are sometimes composed of concentric layers, with a nucleus, and sometimes of prisms radiating from a centre. Fingal's Cave, in the island of Staffa, furnishes a remarkable instance of basaltic columns. The pillars of the Giant's Causeway, Ireland, composed of this stone, and exposed to the roughest sea for ages, have their angles as perfect as those at a distance from the waves. Basalt often assumes curious and fantastic forms, as for example those masses popularly known as 'Sampson's Ribs' at Arthur's Seat, Edinburgh, and 'Lot' and 'Lot's Wife' near the S. coast of St. Helena.

Baschi (bàs'kē), MATTEO, an Italian Minorite friar of the convent of Montefalcone, founder and first general of the Capuchin branch of the Franciscans. He died at Venice, 1552.

Bas'cinet, or **BAS'NET**, a light helmet, sometimes with, but more frequently without a visor, in general use for English infantry in the reigns of Edward II. and III., and Richard II.

Base, in architecture, that part of a column which is between the top of the pedestal and the bottom of the shaft; where there is no pedestal, the part between the bottom of the column and the pavement. The term is also applied to the lower projecting part of the wall of a room, consisting of a plinth and its mouldings.

Base, in chemistry, a term applied to those compound substances which unite with acids to form salts.

Base, or **BASIS**, a term in tactics, signifying the original line on which an offensive army forms; the frontier of a country, a river, or any safe position from which an army takes the field to invade an enemy's country; upon which it depends for its supplies, reinforcements, &c.; to which it sends back its sick and wounded; and upon which it would generally fall back in case of reverse and retreat.

Base-ball, a game played with a bat and ball which has obtained a sort of national character in the United States. It is very similar to the English game of 'rounders,'

and is played by nine players a side. A diamond-shaped space of ground, 90 feet on the side, is marked out, the corners being the 'bases.' One side takes the field, and the other sends a man to bat. When the field side take their places the 'pitcher,' standing inside the ground near the centre and in front of the batsman, delivers a ball to the batsman, who stands at the 'home base,' and who tries to drive it out of the

reach of the fielders, and far enough out of the field to enable him to run round the bases, which scores a run. If he cannot run round all he may stop at any one, and may be followed by another batsman. If he is touched by the ball he is out, and when three on his side are put out, the field side take the bat. Nine of these innings make a game, which the highest score wins. The bat is of a cylindrical shape, not more



Basel, from above the Town.

than $2\frac{1}{2}$ inches in diameter nor more than 42 inches long. The ball is about 9 inches in circumference and pretty elastic.

Basedow (bä'ze-dō), JOHN BERNHARD, German educationalist, born 1723, died 1790. Under the auspices of the Prince of Anhalt-Dessau he opened, in 1774, an educational institution which he called the *Philanthropin*, a school free from sectarian bias, and in which the pupils were to be disciplined in all studies—physical, intellectual, and moral. This school led to the establishment of many similar ones, though Basedow retired from it in 1778. The chief feature of Basedow's system is the full development of the faculties of the young at which he aspired, in pursuance of the notions of Locke and Rousseau.

Basel (bä'zl; Fr. *Bâle*), a canton and city of Switzerland. The canton borders on Alsace and Baden, has an area of 176 sq. m. and a pop. of 135,690, nearly all speak-

ing German. It is divided into two half-cantons, Basel city (Basel-stadt) and Basel country (Basel-Landschaft). The former consists of the city and its precincts, the remainder of the canton forming Basel-Landschaft, the capital of which is Liestal. The city of Basel is 43 m. N. of Bern, and consists of two parts on opposite sides of the Rhine, and communicating by three bridges, one of them an ancient wooden structure; in the older portions is irregularly built with narrow streets; has an ancient cathedral, founded 1010, containing the tombs of Erasmus and other eminent persons; a university, founded in 1459; a seminary for missionaries; a museum containing the valuable public library, pictures, &c. The industries embrace silk ribbons (8000 hands employed), tanning, paper, aniline dyes, brewing, &c.; and the advantageous position of Basel, a little below where the Rhine becomes navigable and at the terminus of

the French and German railways, has made it the emporium of a most important trade. At Basel was signed the treaty of peace between France and Prussia, April 5, and that between France and Spain, July 22, 1795. Pop. 1888, 69,809.

Basel, COUNCIL OF, a celebrated œcumenical council of the church convoked by Pope Martin V. and his successor Eugenius IV. It was opened 14th Dec. 1431, under the presidency of the Cardinal Legate Julianio Cesarini of St. Angelo. The objects of its deliberations were to extirpate heresies (that of the Hussites in particular), to unite all Christian nations under the Catholic church, to put a stop to wars between Christian princes, and to reform the church. But its first steps towards a peaceable reconciliation with the Hussites were displeasing to the pope, who authorized the cardinal legate to dissolve the council. That body opposed the pretensions of the pope, and, notwithstanding his repeated orders to remove to Italy, continued its deliberations under the protection of the emperor Sigismund, of the German princes, and of France. On the pope continuing to issue bulls for its dissolution the council commenced a formal process against him, and cited him to appear at its bar. On his refusal to comply with this demand the council declared him guilty of contumacy, and, after Eugenius had opened a counter-synod at Ferrara, decreed his suspension from the papal chair (Jan. 24, 1438). The removal of Eugenius, however, seemed so impracticable, that some prelates, who till then had been the boldest and most influential speakers in the council, including the Cardinal Legate Julianio, left Basel, and went over to the party of Eugenius. The Archbishop of Arles, Cardinal Louis Allemand, was now made first president of the council, and directed its proceedings with much vigour. In May, 1439, it declared Eugenius, on account of his disobedience of its decrees, a heretic, and formally deposed him. Excommunicated by Eugenius, they proceeded, in a regular conclave, to elect the duke Amadeus of Savoy to the papal chair. Felix V.—the name he adopted—was acknowledged by only a few princes, cities, and universities. After this the moral power of the council declined; its last formal session was held May 16, 1443, though it was not technically dissolved till May 7, 1449, when it gave in its adhesion to Nicholas V., the successor of Eugenius. The decrees of

the Council of Basel are admitted into none of the Roman collections, and are considered of no authority by the Roman lawyers. They are regarded, however, as of authority in points of canon law in France and Germany, as their regulations for the reformation of the church have been adopted in the pragmatic sanctions of both countries, and, as far as they regard clerical discipline, have been actually enforced.

Base-line, in surveying, a straight line measured with the utmost precision to form the starting-point of the triangulation of a country or district. See also *Base*.

Ba'shan, the name in Scripture for a singularly rich tract of country lying beyond the Jordan between Mount Hermon and the land of Gilead. At the time of the Exodus it was inhabited by Amorites, who were overpowered by the Israelites, and the land assigned to the half-tribe of Manasseh. The district was, and yet is, famous for its oak forests and its cattle. Remains of ancient cities are common.

Bashaw, BASHA, an obsolete form of *Pasha*.

Bashee' Islands, a group of islands in the Chinese Sea between Luzon and Formosa, lon. 122° E.; lat. 20° 28' to 20° 55' N. They were discovered by Dampier in 1687, and belong to Spain. The largest island is Batan, with a population of 8000.

Bashi-Bazooks', irregular troops in the Turkish army. They are mostly Asiatics, and have had to be disarmed several times by the regular troops on account of the barbarities by which they have rendered themselves infamous.

Bash'kirs, a tribe of Finnish or of Tatar origin, inhabiting the Russian governments of Ufa, Orenburg, Perm, and Samara. They formerly roamed about under their own princes in Southern Siberia, but in 1556 they voluntarily placed themselves under the Russian sceptre. They are nominally Mohammedans, and live by hunting, cattle-rearing, breeding of cattle and horses, and keeping of bees. They are rude and warlike and partially nomadic. They number about 750,000.

Basic Slag, the slag or refuse matter which is got in making basic steel, and which from the phosphate of lime it contains is a valuable fertilizer.

Basic Steel. See *Steel*.

Basil, the name of two emperors. See *Basilius*.

Bas'il, a labiate plant, *Ocimum Basilicum*,
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a native of India, much used in cookery, especially in France, and known more particularly as sweet or common basil. Bush or lesser basil is *O. minimum*; wild basil belongs to a different genus, being the *Calamintha Clinopodium*.

Basil, St., called the *Great*, one of the Greek fathers, was born in 329, and made in 370 Bishop of Caesarea in Cappadocia, where he died in 379. He was distinguished by his efforts for the regulation of clerical discipline, and above all, his endeavours for the promotion of monastic life. The Greek Church honours him as one of its most illustrious saints, and celebrates his festival January 1. The vows of obedience, chastity, and poverty framed by St. Basil are essentially the rules of all the orders of Christendom, although he is particularly the father of the eastern, as St. Benedict is the patriarch of the western orders.

Basilan', the principal island of the Sulu Archipelago, now belonging to the Philippines, off the s.w. extremity of Mindanao, from which it is separated by the Strait of Basilan. It is about 42 m. in length by 6 average breadth. Pop. about 5000.

Basile'an Manuscripts, two manuscripts of the Greek New Testament now in the library of Basel. (1) A nearly complete uncial copy of the Gospels of the eighth century; (2) a cursive copy of the whole New Testament except the Apocalypse, tenth century.

Basil'ian Liturgy, that form for celebrating the Eucharist drawn up towards the close of the fourth century by Basil the Great, still used in the Greek Church.

Basilian Monks, monks who strictly follow the rules of St. Basil, chiefly belonging to the Greek Church.

Basil'ica, originally the name applied by the Romans to their public halls, either of justice, of exchange, or other business. The plan of the basilica was usually a rectangle divided into aisles by rows of columns, the middle aisle being the widest, with a semi-circular apse at the end, in which the tribunal was placed. The ground-plan of these buildings was generally followed in the early Christian churches, which, therefore, long retained the name of basilica, and it is still applied to some of the churches in Rome by way of distinction, and sometimes to other churches built in imitation of the Roman basilicas.

Basilica'ta, also called POTENZA, an

Italian province, extending north from the Gulf of Taranto, and corresponding pretty closely with the ancient Lucania. Area, 3845 sq. m.; pop. 1891, 540,287.

Basil'icon, a name of several ointments, the chief ingredients of which are wax, pitch, resin, and olive-oil.

Basil'icon Do'ron (the royal gift), the title of a book written by King James I. in 1599, containing a collection of precepts of the art of government. It maintains the claim of the king to be sole head of the church. Printed at Edinburgh, 1603.

Basil'ides (-dēz), an Alexandrian Gnostic who lived under the reigns of Trajan, Adrian, and Antoninus, but the place of his birth is unknown. He was well acquainted with Christianity, but mixed it up with the wildest dreams of the Gnostics, peopling the earth and the air with multitudes of *æons*. His disciples (Basilidians) were numerous in Syria, Egypt, Italy, and Gaul, but they are scarcely heard of after the fourth century.

Bas'ilisk, a fabulous creature formerly believed to exist, and variously regarded as a kind of serpent, lizard, or dragon, and sometimes identified with the cockatrice. It inhabited the deserts of Africa, and its breath and even its look was fatal. The name is now applied to a genus of saurian reptiles (*Basiliscus*), belonging to the family Iguanidæ, distinguished by an elevated crest or row of scales, erectible at pleasure, which, like the dorsal fins of some fishes, runs along the whole length of the back and tail. The mitred or hooded basilisk (*B. mitratus*) is especially remarkable for a membranous bag at the back of the head, of the size of a small hen's egg, which can be inflated with air at pleasure. The other species have such hoods also, but of a less size. To this organ they owe their name, which recalls the basilisk of fable, though in reality they are exceedingly harmless and lively creatures. The *B. amboinensis* is a native of the Indian Archipelago, where it is much used for food. It frequents trees overhanging water, into which it drops when alarmed.

Basil'ius I., a Macedonian, Emperor of the East, born A.D. 820, died 866. He was of obscure origin, but having succeeded in gaining the favour of the Emperor Michael III. he became his colleague in the empire 866. After the assassination of Michael, 867, Basilius became emperor. Though he had worked his way to the throne by a series of crimes, he proved an able and equit-

able sovereign. The versatility, if not the depth of his intellect, is strikingly displayed in his Exhortations to his Son Leo, which are still extant.

Basilius II., Emperor of the East, born 958, died 1025. On the death of his father, the Emperor Romanus the Younger, in 963, he was kept out of the succession for twelve years by two usurpers. He began to reign in conjunction with his brother Constantine 975. His reign was almost a continued scene of warfare, his most important struggle being that which resulted in the conquest of Bulgaria, 1018.

Ba'sin, in physical geography, the whole tract of country drained by a river and its tributaries. The line dividing one river basin from another is the water-shed, and by tracing the various water-sheds we divide each country into its constituent basins. The basin of a loch or sea consists of the basins of all the rivers which run into it.—In geology a basin is any dipping or disposition of strata towards a common axis or centre, due to upheaval and subsidence. It is sometimes used almost synonymously with 'formation' to express the deposits lying in a certain cavity or depression in older rocks. The 'Paris basin' and 'London basin' are familiar instances.

Ba'singstoke, a town of England, county of Hants, 18 miles N.N.E. from Winchester. It has a good trade in corn, malt, &c., and now gives name to one of the parl. divisions of the county. Pop. 1891, 7960.

Bas'kerville, JOHN, celebrated English printer and type-founder, born in 1706, died 1775. He settled at Birmingham as a writing-master, subsequently engaged in the manufacture of japanned works, and in 1750 commenced printer. From his press came highly-prized editions of ancient and modern classics, Bibles, prayer-books, &c., all beautifully-printed works.

Basket, a vessel or utensil of wicker-work, made of interwoven osiers or willows, rushes, twigs, grasses, &c. The process of basket-making is very simple, and appears to be well known among the very rudest peoples. The ancient Britons excelled in the art, and their baskets were highly prized in Rome.

Basking-shark (*Scăchē maxima* or *Cetorhīnus maximus*), a species of shark, so named from its habit of basking in the sun at the surface of the water. It reaches the length of 40 feet, and its liver yields a large quantity of oil. It frequents the northern

seas, and is known also as the sail-fish or sun-fish.

Basle. See *Basel*.

Basoche. See *Bazoche*.

Basques (băks), or BISCAYANS (in their own language, *Euscaldunac*), a remarkable race of people dwelling partly in the south-west corner of France, but mostly in the north of Spain adjacent to the Pyrenees. They are probably descendants of the ancient Iberi, who occupied Spain before the Celts. They preserve their ancient language, former manners, and national dances, and make admirable soldiers, especially in guerrilla warfare. Their language is highly polysynthetic, and no connection between it and any other language has as yet been made out. There are four principal dialects, which are not only distinguished by their pronunciation and grammatical structure, but differ even in their vocabularies. The Basques, who number about 600,000, occupy in Spain the provinces of Biscay, Guipuzcoa, and Alăva; in France parts of the departments of the Upper and Lower Pyrenees, Ariège, and Upper Garonne.

Basra. See *Bassora*.

Bas-relief (bă'rē-lēf or bas'rē-lēf), BASS-RELIEF, low-relief, a mode of sculpturing figures on a flat surface, the figures having a



Bas-relief, from the Elgin Marbles.

very slight relief or projection from the surface. It is distinguished from *haut-relief* (*alto-rilievo*), or high-relief, in which the figures stand sometimes almost entirely free from the ground. Bas-relief work has been described as 'sculptured painting' from the capability of disposing of groups of figures and exhibiting minor adjuncts, as in a painting.

Bass (bās; from the Italian *basso*, deep,

low), in music, the lowest part in the harmony of a musical composition, whether vocal or instrumental. According to some it is the fundamental or most important part, while others regard the melody or highest part in that light. Next to the melody, the bass part is the most striking, the freest and boldest in its movements, and richest in effect.—

Figured bass, a bass part having the accompanying chords suggested by certain figures written above or below the notes—the most successful system of short-hand scoring at present in use among organists and pianists.

—*Fundamental bass*, the lowest note or root of a chord; a bass consisting of a succession of fundamental notes.—*Thorough bass*, the mode or art of expressing chords by means of figures placed over or under a given bass. Figures written over each other indicate that the notes they represent are to be sounded simultaneously, those standing close after each other that they are to be sounded successively. The common chord in its fundamental form is generally left unfigured, and accidentals are indicated by using sharps, naturals, or flats along with the figures.

Bass (bàs), the name of a number of fishes of several genera, but originally belonging to a genus of sea-fishes (*Labrax*) of the perch family, distinguished from the true perches by having the tongue covered by small teeth and the preoperculum smooth. *L. lupus*, the only British species, called also sea-dace, and from its voracity sea-wolf, resembles somewhat the salmon in shape, and is much esteemed for the table, weighing about 15 lbs. *L. lineatus* (*Roccus lineatus*), or striped bass, an American species, weighing from 25 to 30 lbs., is much used for food, and is also known as rock-fish. Both species occasionally ascend rivers, and attempts have been made to cultivate British bass in fresh-water ponds with success. Two species of black bass (*Micropterus salmoides* and *M. dolomieu*), American fresh-water fishes, are excellent as food and give fine sport to the angler. The former is often called the large-mouthed black bass, from the size of its mouth. Both make nests and take great care of their eggs and young. The *Centropristis nigricans*, an American sea-fish of the perch family, and weighing 2 to 3 lbs., is known as the sea-bass.

Bass (bàs), **THE**, a remarkable insular trap-rock, at the mouth of the Firth of Forth, 3 miles from North Berwick, of a circular form, about 1 mile in circumference, rising

majestically out of the sea to a height of 313 feet. It pastures a few sheep, and is a great breeding-place of solan-geese. During the persecution of the Covenanters its castle, long since demolished, was used as a state prison, in which several eminent Covenanters were confined. It was held from 1691 to 1694 with great courage and pertinacity by twenty Jacobites, who in the end capitulated on highly honourable terms.

Bass. See *Basswood*.

Bassa'no, a commercial city of North Italy, province of Vicenza, on the Brenta, over which is a covered wooden bridge. It has lofty old walls and an old castle, and has various industries and an active trade. Near Bassano, September 8, 1796, Bonaparte defeated the Austrian general Wurmser. Pop. 14,524.

Bassa'no (from his birthplace; real name GIACOMO DA PONTE), an Italian painter, born 1510, died 1592. He painted historical pieces, landscapes, flowers, &c., and also portraits; and left four sons, who all became painters, Francesco being the most distinguished.

Bas'saris, a genus of N. American carnivora representing the civets of the old world.

Bassein (bas-sān'), a town in Lower Burmah, province of Pegu, on both banks of the Bassein river, one of the mouths of the Irrawaddy, and navigable for the largest ships. It has considerable trade, exporting large quantities of rice, and importing coal, salt, cottons, &c. Pop. 28,147.—Bassein District has an area of 7047 sq. m. and a pop. of 389,419.

Bassein (bas-sān'), a decayed town in Hindustan, 28 miles north from Bombay. At the beginning of the eighteenth century it was a fine and wealthy city, with over 60,000 inhabitants; in 1881 it had only 10,357.

Basselin (bàs-lan), OLIVIER, an old French poet or song-writer, born in the Val-de-Vire, Normandy, about the middle of the fourteenth century, died 1418 or 1419. His sprightly songs have given origin and name to the modern Vaudevilles.

Basselisse Tapestry, a kind of tapestry wrought with a horizontal warp. See *Hautelisse*.

Basses-Alpes (bàs-ālp; 'Lower Alps'), a department of France, on the Italian border. See *Alpes*.

Basses-Pyrénées (bàs-pē-rā-nā; 'Lower Pyrenees'), a French department, bordering on Spain and the Bay of Biscay. See *Pyrénées*.

Bass'et, the name of a game at cards, formerly much played, especially in France. It is very similar to the modern *faro*.

Basseterre (bäs-tār), two towns in the West Indies.—1. Capital of the island of St. Christopher's, at the mouth of a small river, on the south side of the island. Trade considerable. Pop. about 9000.—2. The capital of the island of Guadaloupe. It has no harbour, and the anchorage is unsheltered and exposed to a constant swell. Pop. 8790.

Basset-horn, a musical instrument, now practically obsolete, a sort of clarinet of enlarged dimensions, with a curved and bell-shaped metal end. The compass extends from F below the bass-staff to C on the second ledger-line above the treble. Mozart has several pieces written for the basset-horn.

Bassetlaw, a parl. division of the county of Nottingham.

Bass'ia, a genus of tropical trees found in the East Indies and Africa, nat. order Sapotaceæ. One species (*B. Parkii*) is supposed to be the shea-tree of Park, the fruit of which yields a kind of butter that is highly valued, and forms an important article of commerce in the interior of Africa. There are several other species, of which *B. longifolia*, or Indian oil-tree, and *B. butyræcea*, or Indian butter-tree, are well-known examples, yielding a large quantity of oleaginous or butyraceous matter. The wood is as hard and incorruptible as teak.

Bassompierre (bä-son-pyār), FRANÇOIS DE, Marshal of France, distinguished both as a soldier and a statesman; born 1579, died 1646. In 1602 he made his first campaign against the Duke of Savoy, and he fought with equal distinction in the following year in the imperial army against the Turks. In 1622 Louis XIII. appointed him Marshal of France, and became so much attached to him that Luynes, the declared favourite, sent him on embassies to Spain, Switzerland, and England. After his return he became an object of suspicion to Cardinal Richelieu, and was sent to the Bastille in 1631, from which he was not released till 1643, after the death of the cardinal. During his detention he occupied himself with writing his memoirs, which shed much light on the events of that time.

Bassoon', a musical wind-instrument of the reed order, blown with a bent metal mouthpiece, and holed and keyed like the

clarinet. Its compass comprehends three octaves rising from B flat below the bass-staff. Its diameter at bottom is 3 inches, and for convenience of carriage it is divided into two or more parts, whence its Italian name *fagotto*, a bundle. It serves for the bass among wood wind-instruments, as hautboys, flutes, &c.

Bass'ora, or BASRAH, a city in Asiatic Turkey, on the west bank of the Shat-el-Arab (the united stream of the Tigris and Euphrates), about 50 miles from its mouth, and nearly 300 south-east of Bagdad. It is surrounded by a wall about 10 miles in circuit, from 20 to 25 feet thick, but much of the area inclosed is occupied by gardens, &c. The houses are generally mean. considerable transit trade is carried on here between the Turkish and Persian dominions and India, and since communication by steamer has been established with Bagdad and Bombay the prosperity of the town has greatly increased. The chief exports are dates, camels and horses, wool and wheat; imports coffee, indigo, rice, tissues, &c. Thirty years ago the inhabitants were estimated at 5000; they are now about 40,000; in the middle of last century they were said to number 150,000. The recent substitution of date and wheat cultivation for that of rice has rendered the place much more healthy. The ruins of the ancient and more famous Bassora—founded by Caliph Omar in 636, at one time a centre of Arabic literature and learning and regarded as 'the Athens of the East'—lie about 9 miles south-west of the modern town.

Bassora Gum, an inferior kind of gum resembling gum-arabic.

Basso-rilievo. See *Bas-relief*.

Bass Rock. See *Bass*.

Bass Strait, a channel beset with islands, which separates Australia from Tasmania, 120 miles broad, discovered by George Bass, a surgeon in the royal navy, in 1798.

Basswood, BASS, the American lime-tree or linden (*Tilia americana*), a tree common in N. America, yielding a light, soft timber.

Bast, the inner bark of exogenous trees, especially of the lime or linden, consisting of several layers of fibres. The manufacture of bast into mats, ropes, shoes, &c., is in some districts of Russia a considerable



Bassoon.

branch of industry, bast mats, used for packing furniture, covering plants in gardens, &c., being exported in large quantities. Though the term is usually restricted, many of the most important fibres of commerce, such as hemp, flax, jute, &c., are the products of bast or liber.

Bastar', a feudatory state in Upper Godavari district, Central Provinces of India; area, 13,062 sq. m.; pop. 196,248. Chief town, Jagdalpur; pop. 4294.

Bas'tard, a child begotten and born out of wedlock; an illegitimate child. By the civil and canon laws, and by the law of Scotland (as well as of some of the United States), a bastard becomes legitimate by the intermarriage of the parents at any future time. But by the laws of England a child, to be legitimate, must at least be *born* after the lawful marriage; it does not require that the child shall be begotten in wedlock, but it is indispensable that it should be born after marriage, no matter how short the time, the law presuming it to be the child of the husband. The only incapacity of a bastard is that he cannot be heir or next of kin to any one save his own issue. In England the maintenance of a bastard in the first instance devolves on the mother, while in Scotland it is a joint burden upon both parents. The mother is entitled to the custody of the child in preference to the father.

Bastard Bar, more correctly *baton sinister*, the heraldic mark used to indicate illegitimate descent. It is a diminutive of the bend sinister, of which it is one-fourth in width, coupé or cut short at the ends, so as not to touch the corners of the shield.



Bastard Bar.

Bastard Cedar. See *Cedrela*.

Bastard Saffron. See *Safflower*.

Bastia (bàs-tē'à), the former capital of the island of Corsica, upon the N.E. coast, 75 miles N.E. of Ajaccio, on a hill slope; badly built, with narrow streets, a strong citadel, and an indifferent harbour; with some manufactures, a considerable trade in hides, soap, wine, oil, pulse, &c. Pop. 20,100.

Bas'tian, ADOLF, German traveller and ethnologist, born in 1826. His travels have embraced various parts of Europe, the U. States, Mexico, Peru, Australia and New Zealand, Southern and Western Africa, Egypt, Arabia, India, South-eastern Asia, the Asiatic Archipelago, Japan, China, Mon-

golia, Siberia, &c. His numerous writings throw light on almost every subject connected with ethnology or anthropology, as well as psychology, linguistics, non-Christian religions, geography, &c. One of his chief works is *Die Völker des östlichen Asien* (Peoples of Eastern Asia; 6 vols., 1866-71).

Bas'tian, HENRY CHARLTON, English physician and biologist, born at Truro in 1837. He was educated at Falmouth and at University College, London, where he was assistant-curator in the museum in 1860-63. He obtained the degree of M.A. in 1861 from the University of London, graduating subsequently in medicine at the same university (M.B. 1863, M.D. 1866). In 1864-66 he was a medical officer in Broadmoor Criminal Lunatic Asylum, and in the latter year was appointed lecturer on pathology and assistant-physician in St. Mary's Hospital. In 1867 he became professor of pathological anatomy in University College, subsequently he was also professor of clinical medicine, and he has recently been appointed to the chair of medicine and clinical medicine. Apart from numerous contributions to medical and other periodicals, and to Quain's Dictionary of Medicine, he has written *The Modes of Origin of Lowest Organisms* (1871); *The Beginnings of Life* (1872); *Evolution and the Origin of Life* (1874); *Lectures on Paralysis from Brain Disease* (1875); and *The Brain as an Organ of Mind* (1880), which has been translated into French and German. He has been an advocate for spontaneous generation.

Bastiat (bàs-tē-à), FRÉDÉRIC, French economist and advocate of free-trade, born at Bayonne 1801, died at Rome 1850. He became acquainted with Cobden and the English free-traders, whose speeches he translated into French. His chief works are: *Sophismes Économiques* (1846), *Propriété et Loi, Justice et Fraternité* (1848), *Protectionisme et Communisme* (1849), *Harmonies Économiques* (1849) translated into English (1860), &c.

Bastille (bàs-tēl'), a French name for any strong castle provided with towers, but as a proper name the state prison and citadel of Paris, which was built about 1370 by Charles V. It was ultimately used chiefly for the confinement of persons of rank who had fallen victims to the intrigues of the court or the caprice of the government. (See *Cachet, Lettres de*.) The capture of the Bastille by the Parisian mob, 14th July, 1789, was the opening act of the revolution.

On that date the Bastille was surrounded by a tumultuous mob, who first attempted to negotiate with the governor Delaunay, but when these negotiations failed, began to attack the fortress. For several hours the mob continued their siege without being able to effect anything more than an entrance into the outer court of the Bastille; but at last the arrival of some of the Royal

Guard with a few pieces of artillery forced the governor to let down the second drawbridge and admit the populace. The governor was seized, but on the way to the *hôtel de ville* he was torn from his captors and put to death. The next day the destruction of the Bastille commenced. Not a vestige of it exists, but its site is marked by a column in the *Place de la Bastille*.



The Bastille, as in time of Louis XV.

Bastina'do, an eastern method of corporal punishment, consisting of blows upon the soles of the feet, applied with a stick.

Bas'tion, in fortification, a large mass of earth, faced with sods, brick, or stones, standing out from a rampart, of which it is a principal part. A bastion consists of two flanks, each commanding and defending the adjacent *curtain*, or that portion of the wall extending from one bastion to another, and two *faces* making with each other an acute angle called the *salient angle*, and commanding the outworks and ground before the fortification. The distance between the two flanks is the *gorge*, or entrance into the bastion. The use of the bastion is to bring every point at the foot of the rampart as much as possible under the guns of the place.

Bast'wick, JOHN, English physician and ecclesiastical controversialist, born in 1593, died 1654. He settled at Colchester, but

instead of confining himself to his profession, entered keenly into theological controversy, and was condemned by the Star Chamber for his books against Prelacy: *Elenchus Religionis Papisticæ*, *Flagellum Pontificis*, and *The Letanie of Dr. J. Bastwick*. With Prynne and Burton he was sentenced to lose his ears in the pillory, to pay a fine of £5000, and to be imprisoned for life. He was released by the Long Parliament, and entered London in triumph along with Prynne and Burton. He appears to have continued his controversies to the very last with the Independents and others.

Basu'toland, a native province and British South African possession, inclosed between the Orange Free State, Natal, Griqualand East, and Cape Colony. The Basutos belong chiefly to the great stem of the Bechuanas, and have made greater advances in civilization than perhaps any other South

African race. In 1866 the Basutos, who had lived under a semi-protectorate of the British since 1848, were proclaimed British subjects, their country placed under the government of an agent, and in 1871 it was joined to Cape Colony. In 1879 the attempted enforcement of an act passed for the disarmament of the native tribes caused a revolt under the chief Moirosi, which the Cape forces were unable to put down. When peace was restored Basutoland was disannexed from Cape Colony (1884), and is now governed by a resident commissioner under the high commissioner for South Africa. Basutoland has an area of about 10,300 sq. miles, much of it covered with grass, and there is but little wood. The climate is pleasant. The natives keep cattle, sheep, and horses, cultivate the ground, and export grain. It is divided into four districts, each presided over by a magistrate. Pop. 1891, European, 578; native, 218,324.

Bat, one of the group of wing-handed, flying mammals, having the fore-limb peculiarly modified so as to serve for flight, and constituting the order Cheiroptera. Bats are animals of the twilight and darkness, and are common in temperate and warm regions, but are most numerous and lar-



Great Horse-shoe Bat (*Rhinolophus Ferrumequinum*).

gest in the tropics. All European bats are small, and have a mouse-like skin. The body of the largest British species, *Vesperugo noctula*, is less than that of a mouse, but its wings stretch about 15 inches. During the day it remains in caverns, in the crevices of ruins, hollow trees, and such-like lurking-places, and flits out at evening in search of food, which consists of insects. Several species of the same genus are common in North America. Many bats are remarkable for having a singular nasal cutaneous appendage, bearing in some cases a fancied resemblance to a horse-shoe. Two

of these horse-shoe bats occur in Britain. Bats may be conveniently divided into two sections—the insectivorous or carnivorous, comprising all European and most African and American species; and the fruit-eating, belonging to tropical Asia and Australia, with several African forms. An Australian fruit-eating bat (*Pteropus edulis*), commonly known as the kalong or flying-fox, is the largest of all the bats; it does much mischief in orchards. At least two species of South American bats are known to suck the blood of other mammals, and thence are called 'vampire-bats' (though this name has also been given to a species not guilty of this habit). The best known is the *Desmodus rufus* of Brazil, Chili, &c. As winter approaches, in cold climates bats seek shelter in caverns, vaults, ruinous and deserted buildings, and similar retreats, where they cling together in large clusters, hanging head downwards by the feet, and remain in a torpid condition until the returning spring recalls them to active exertions. Bats generally bring forth two young, which, while suckling, remain closely attached to the mother's teats, which are two, situated upon the chest. The parent shows a strong degree of attachment for her offspring, and, when they are captured, will follow them, and even submit to captivity herself rather than forsake her charge.

Batalha (bà-tál'yà), a village in Portugal, 69 miles north of Lisbon, with a renowned convent of Dominicans, a splendid building.

Batan'gas, a town of the Philippines, in the island Luzon, capital of a province of same name, 58 miles s. of Manilla. Pop. 17,380.

Bata'tas. See *Sweet-potato*.

Bat'avi. See *Batavians*.

Bata'via, a city and seaport of Java, on the north coast of the island, the capital of all the Dutch East Indies. It is situated on a wide, deep bay, the principal warehouses and offices of the Europeans, the Java Bank, the exchange, &c., being in the old town, which is built on a low, marshy plain near the sea, intersected with canals and very unhealthy; while the Europeans reside in a new and much healthier quarter. Batavia has a large trade, sugar being the chief export. It was founded by the Dutch in 1619, and attained its greatest prosperity in the beginning of the eighteenth century. Its inhabitants are chiefly Malay, with a considerable admixture of Chinese and a small number of Europeans. Pop. 92,497.

Batavia, a flourishing town of Western New York, 36 miles northeast of Buffalo by rail, has several saw mills and factories of sashes and blinds, plows and farming implements; the seat of the State institution for the blind. Population in 1890, 7221.

Batavians, an old German nation which inhabited a part of the present Holland, especially the island called *Batavia*, formed by that branch of the Rhine which empties itself into the sea near Leyden, together with the Waal and the Meuse. Tacitus asserts them to have been a branch of the Catti. They were subdued by Germanicus, and were granted special privileges for their faithful services to the Romans, but revolted under Vespasian. They were, however, again subjected by Trajan and Adrian, and at the end of the third century the Salian Franks obtained possession of the island of Batavia.

Batchian. See *Bachian*.

Bath (bâth), a city of England in Somersetshire, on the Avon, which is navigable for barges from Bristol; is beautifully placed among the hills, and the houses are built of freestone, obtained from the neighbourhood. The Abbey Church ranks as one of the finest specimens of perpendicular Gothic architecture. Bath is remarkable for its medicinal waters, the four principal springs yielding no less than 184,000 gallons of water a day; and the baths are both elegant and commodious. The temperature of the springs varies from 109° to 117° Fahrenheit. They contain carbonic acid, chloride of sodium and of magnesium, sulphate of soda, carbonate and sulphate of lime, &c. Bath was founded by the Romans, and called by them *Aquæ Solis* (Waters of the Sun). Amongst the Roman remains discovered here have been some fine baths. The height of its prosperity was reached, however, in the eighteenth century when Beau Nash was leader of the fashion and master of its ceremonies. Since then, though it still attracts large numbers of visitors, it has become the resort of valetudinarians chiefly. Jointly with Wells it is the head of a diocese, and returns two members to the House of Commons. Pop. of mun. bor. 51,843; parl. bor. 54,550.

Bath, a town, United States, Maine, on the west side and at the head of the winter navigation of the Kennebec, 12 miles from the sea. Chief industries: ship-building and allied crafts. Pop. 8723.

Bath, the immersion of the body in water, or an apparatus for this purpose. The use of the bath as an institution apart from occasional immersion in rivers or the sea, is, as might be anticipated, an exceedingly old custom. Homer mentions the bath as one of the first refreshments offered to a guest; thus, when Ulysses enters the palace of Circe, a bath is prepared for him, and he is anointed after it with costly perfumes. No representation, however, of a bath as we understand it is given upon the Greek vases, bathers being represented either simply washing at an elevated basin, or having water poured over them from above. In later times, rooms, both public and private, were built expressly for bathing, the public baths of the Greeks being mostly connected with the gymnasia. Apparently, by an inversion of the later practice, it was customary in the Homeric epoch to take first a cold and then a hot bath; but the Lacedæmonians substituted the hot-air sudorific bath, as less enervating than warm water, and in Athens at the time of Demosthenes and Socrates the warm bath was considered by the more rigorous as an effeminate custom. The fullest details we have with respect to the bathing of the ancients apply to its luxurious development under the Romans. Their bathing establishments consisted of four main sections: the undressing room, with an adjoining chamber in which the bathers were anointed; a cold room with provision for a cold bath; a room heated moderately to serve as a preparation for the highest and lowest temperatures; and the sweating-room, at one extremity of which was a vapour-bath and at the other an ordinary hot bath. After going through the entire course both the Greeks and Romans made use of strigils or scrapers, either of horn or metal, to remove perspiration, oil, and impurities from the skin. Connected with the bath were walks, covered race-grounds, tennis-courts, and gardens, the whole, both in the external and internal decorations, being frequently on a palatial scale. The group of the Laocoon and the Farnese Hercules were both found in the ruins of Roman baths. With respect to modern baths, that commonly in use in Russia consists of a single hall, built of wood, in the midst of which is a powerful metal oven, covered with heated stones, and surrounded with broad benches, on which the bathers take their places. Cold water is then poured upon the heated stones, and a

BATH.

thick, hot steam rises, which causes the sweat to issue from the whole body. The bather is then gently whipped with wet birch rods, rubbed with soap, and washed with lukewarm and cold water; of the latter, some pailfuls are poured over his head; or else he leaps, immediately after this sweating-bath, into a river or pond, or rolls in the snow. The Turks, by their religion, are obliged to make repeated ablutions daily, and for this purpose there is, in every city, a public bath connected with a mosque. A favourite bath among them, however, is a modification of the hot-air sudorific-bath of the ancients introduced under the name of 'Turkish' into other than Mohammedan countries. A regular accompaniment of this bath, when properly given, is the operation known as 'kneading,' generally performed at the close of the sweating process, after the final rubbing of the bather with soap, and consisting in a systematic pressing and squeezing of the whole body, stretching the limbs, and manipulating all the joints as well as the fleshy and muscular parts. Public baths are now common in the United States. There are also numerous "hot springs" in nearly every section. Among the most famous are those at Hot Springs, in Garland co., Arkansas, resorted to by invalids for the cure of rheumatism and similar complaints. There are from seventy-five to one hundred springs, varying in temperature from 105° to 160°, issuing from a lofty ridge of sandstone overlooking the town, while others rise in the bed of the stream near by.

The principal natural warm baths in England are at Bath and Bristol in Somersetshire, and Buxton and Matlock in Derbyshire. The baths of Harrogate, which are strongly impregnated with sulphuretted hydrogen gas, are also of great repute for the cure of obstinate cutaneous diseases, indurations of the glands, &c. The most celebrated natural hot baths in Europe are those of Aix-la-Chapelle, and the various Baden in Germany; Toeplitz, in Bohemia; Bagnières, Baréges, and Dax, in the south of France; and Spa, in Belgium. Besides the various kinds of water-bath with or without medication or natural mineral ingredients, there are also milk, oil, wine, earth, sand, mud, and electric baths, smoke-baths and gas-baths; but these are as a rule only indulged after specific prescription.

The practice of bathing as a method of cure in cases of disease falls under the head of hy-

dropathy; but even when it is employed simply for pleasure or purification due regard should be paid to the physiological condition of the bather. In many cases cold bathing should be avoided altogether, especially by those who have any tendency to spitting of blood or consumption, by gouty people, or by those who have any latent visceral disease or apoplectic tendency. Wherever the bath is followed by shivering instead of by a healthy reactionary glow, it is undesirable; and a cold bath in the morning after any debauchery or excess in eating or drinking on the previous evening is exceedingly imprudent. Delicate persons and children ought not to bathe in the sea before ten or eleven o'clock in the morning, and in no case should bathing be indulged after a long fast. In cold streams and rivers additional precautions should be taken, the cold plunge, when heated or fatigued, being frequently attended with fatal results. Even warm baths are not wholly free from danger; apoplexy and death having been known to follow a hot bath when entered with a full stomach. As a rule the temperature should not exceed 105°, and they should not be too long continued. Frequent indulgence in them has an enervating effect, though the majority of people need as yet no renewal of Hadrian's prohibitive legislation in this matter.

Bath, KNIGHTS OF THE, an order of England, supposed to have been instituted by Henry IV. on the day of his coronation, but allowed to lapse after the reign of Charles II. till 1725, when George I. revived it as a military order. By the book of statutes then prepared the number of knights was limited to the sovereign and thirty-seven knights companions; but the limits of the order were greatly extended in 1815, and again in 1847, when it was opened to civilians. It now consists of three classes, each subdivided into (1) military members, (2), civil members, and (3), honorary members, consisting of foreign princes and officers. The first-class consists of Knights of the Grand Cross (G.C.B.); the second of Knights Commanders (K.C.B.); and the third of Companions (C.B.). The Dean of Westminster is dean of the order. The ribbon of the order is crimson; the badge a gold cross of eight points, with the lion of England between the four principal angles, and having in a circle in the centre the rose, thistle, and shamrock between three imperial crowns; motto: 'Tria juncta in uno.' Stars are

worn by the two first classes, with the additional motto, 'Ich dien.'

Bath-brick, a preparation of siliceous earth found in the river Parret in Somersetshire, in the form of a solid brick, used for cleaning knives, &c.

Bath'gate, a town, Scotland, county Linlithgow, having glass-works, a distillery, and several grain-mills, and in the vicinity the paraffin works known as Young's, and coal and ironstone mines. Pop. 4885.

Bathing. See *Bath*.

Bathom'eter, an instrument for measuring the depth of sea beneath a vessel without casting a line. It is based upon the fact that the attraction exerted upon any given mass of matter on the ship is less when she is afloat than ashore because of the less density of sea-water as compared with that of earth or rock.

Bathori (bă'to-rē), a Hungarian family, which gave Transylvania five princes, and Poland one of its greatest kings. The more important members were:—1. STEPHEN, born in 1532, elected Prince of Transylvania in 1571, on the death of Zapolya, and in 1575 king of Poland. He accomplished many internal reforms, recovered the Polish territories in possession of the Czar of Muscovy, and reigned prosperously till his death in 1586.—2. SIGISMUND, nephew of Stephen, educated by the Jesuits, became waiwode or prince of Transylvania in 1581, shook off the Ottoman yoke, and had begun to give hopes of reigning gloriously when he resigned his dominions to the emperor Rudolph II., in return for two principalities in Silesia, a cardinal's hat, and a pension. Availing himself, however, of an invitation by the Transylvanians, he returned, and placed himself under the protection of the Porte, but was defeated by the Imperialists in every battle, and finally sent to Prague, where he died almost forgotten in 1613.—3. ELIZABETH, niece of Stephen, king of Poland, and wife of Count Nadasdy, of Hungary. She is said to have bathed in the blood of 300 young girls in the hope of renewing her youth, and to have committed other enormities. She was latterly seized and confined till her death in 1614.

Bat-horse. See *Batman*.

Ba'thos, a Greek word meaning depth, now used to signify a ludicrous sinking from the elevated to the mean in writing or speech. First used in this sense by Pope.

Bath-stone, a species of English limestone, also called *Bath-oolite* and *roc-stone*,

from the small rounded grains of which it is composed. It is extensively worked near Bath for building purposes. When just quarried it is soft, but though it soon becomes hard on exposure to the atmosphere, and is of handsome appearance, it is not very durable.

Bath'urst, a British settlement on the west coast of Africa, on the island of St. Mary's, near the mouth of the Gambia, with a trade in gum, bees'-wax, hides, ivory, gold, rice, cotton, and palm-oil. Pop. 4537.

Bathurst, a town in the western district of New South Wales, on the Macquarie river, with wide, well-laid-out streets at right angles, and a central square, tanneries, railway workshops, breweries, flour-mills, and other industries. Pop. 7221.

Bathurst, ALLEN BATHURST, EARL, a distinguished statesman in Queen Anne's reign; born 1684. He took part with Harley and St. John in opposing the influence of Marlborough, was raised to the peerage in 1711, impeached the promoters of the South Sea scheme, opposed the bill against Atterbury, and was a leading antagonist of Walpole. He was created earl in 1772. His name is also associated with those of the leading writers and wits of the day. Died 1775.

Bathurst, HENRY BATHURST, EARL, son of the second earl, a prominent Tory statesman, after whom various capes, islands, and districts were named. Born 1762; in 1807, president of Board of Trade; in 1809, secretary for foreign affairs; and in 1812, secretary for the colonies, a post held by him for sixteen years. He was also president of the council under Wellington, 1828–30. Died 1834.

Bathurst Island, on the North Australian coast, belonging to S. Australia, separated from Melville Island by a narrow strait; triangular in shape, with a wooded area of about 1000 sq. miles.—Also an island in the Arctic Ocean discovered by Parry, E. of Cornwallis and W. of Melville Island, 76° N., 100° W.

Bathyb'ius (Gr. *bathys*, deep, *bios*, life), the name given by Huxley to what was regarded as masses of animal matter found covering the sea-bottom at great depths, and in such abundance as to form in some places deposits of 30 feet or more in thickness. It has been described as a tenacious, viscid, slimy substance, exhibiting under the microscope a net-work of granular, mucilaginous matter, which expands and contracts spontaneously, and thus forms an organism

of the utmost simplicity corresponding in every respect to protoplasm. But the existence of such a substance has been a matter of dispute among scientists.

Batiste (ba-tĕst'), a fine linen cloth made in Flanders and Picardy, named after its inventor Batiste of Cambray.

Bat'ley, a municipal borough of England, West Riding of York, about a mile from Dewsbury, with which it is united for parliamentary purposes; principal manufactures, heavy woollen cloths, such as pilot, beaver, police, army, and frieze cloths, flushings, and blankets. Pop. 1891, 28,719.

Batman (bat'man or bā'man; from Fr. *bât*, a pack-saddle), in the British army, a person allowed by the government to every company of a regiment on foreign service. His duty is to take charge of the cooking utensils, &c., of the company, and he has a bat-horse to convey these utensils from place to place.

Ba'ton, a short staff or truncheon, in some cases used as an official badge, as that of a field-marshal. The conductor of an orchestra has a baton for the purpose of directing the performers as to time, &c. In heraldry, what is usually called the 'bastard bar,' or 'bar sinister,' is properly a baton sinister. See *Bastard Bar*.

Bat'on Rouge (rözh), the capital of Louisiana, United States, on the left bank of the Mississippi, with an arsenal, barracks, military hospital, state-house, state university, &c. On Aug. 5, 1862, the Confederates under General Breckenridge suffered a severe defeat before it. Pop. 1890, 10,478.

Batoum, or **BATUM** (bā-töm'), a port on the east coast of the Black Sea, acquired by Russia by the Treaty of Berlin, on condition that its fortifications were dismantled and it were thrown open as a free port. It rapidly grew to be the main outlet for Transcaucasia; its harbour was enlarged for alleged commercial reasons; an arsenal was built outside it; it was connected by a military road with Kars; and finally, in July, 1886, the Russian government declared it to be a free port no longer. Its importance as a naval and military station to Russia is unquestionably great, and it will probably rank as one of the strongest positions on the Black Sea. The water is of great depth close inshore, and the shipping lies under protection of the overhanging cliffs of the Gouriél Mountains. Pop. over 15,000.

Batrachians (ba-trā'ki-anz), the fourth order in Cuvier's arrangement of the class

Reptilia, comprising frogs, toads, newts, salamanders, and sirens. The term is now often employed as synonymous with amphibia, but is more usually restricted to the order Anura or tailless amphibia. See *Amphibia*.

Batshian. See *Bachian*.

Bat'ta, an allowance which military officers in India receive in addition to their pay. It was originally given only when the officers were under march or in the field, but now half batta is paid when troops are in cantonments.

Battalion, a body of men arrayed for battle; specifically, a body of infantry. In the United States army it consists of two, four, six, eight, or ten companies, according to circumstances, and is commanded by the senior officer present. The number of enlisted men varies from 100 to 1000, in accordance with the minimum or maximum organization of the army. The army is divided into corps, divisions, brigades, regiments, and battalions.

Bat'tas, a people belonging to the Malayan race inhabiting the valleys and plateaus of the mountains that extend longitudinally through the island of Sumatra. They practise agriculture and cattle-rearing, and are skilful in various handicrafts; they have also a written literature and an alphabet of their own, their books treating of astrology, witchcraft, medicine, war, &c. They are under the rule of hereditary chieftains.

Bat'tenberg, a village in the Prussian prov. of Hesse-Nassau, from which the sons (bymorganatic marriage) of Prince Alexander of Hesse, uncle of Louis, grand-duke of Hesse, the husband of Princess Alice of Britain, derive their title of princes of Battenberg. One of them, Alexander, was elected Prince of Bulgaria in 1879, but had to abdicate in 1886. Another, Henry, was married to Princess Beatrice of Great Britain in 1885. A third, Louis, is married to a daughter of Princess Alice.

Bat'tens, sawn deals, usually 12 to 14 feet long, 7 inches broad, and 2½ inches thick.

Battering-ram, an engine for battering down the walls of besieged places. The ancients employed two different engines of this kind—one suspended in a frame, the other movable on wheels or rollers. They consisted of a beam or spar with a massive metal head, and were set in motion either by a direct application of manual force or by means of cords passing over pulleys.

Some are said to have been 120 feet or more in length, and to have been worked by 100 men. One is described as being 180 feet



Battering-ram.

long, and having a head weighing $1\frac{1}{2}$ tons. They were generally covered with a roof or screen for the protection of the workers.

Bat'tersea, a suburban district of London, in Surrey, in a low situation on the south bank of the Thames, nearly opposite Chelsea, with a fine public park extending over 185 acres. The district is associated with the names of Pope and Bolingbroke, and with the Wellington-Winchelsea duel. With Clapham it forms a parliamentary borough, returning two members. Pop. of Battersea, 1891, 97,204.

Bat'tery, as a military term, (1) any number of guns grouped in position for action; (2) any work constructed as a position for such guns; (3) the tactical unit of field-artillery, more properly described as a field battery, consisting in the American army of six guns with all necessary appurtenances. There are, however, many kinds of batteries, distinguished by names, referring either to position or the duties which they perform. In gun and howitzerbatteries there are embrasures through which the firing takes place; but mortar batteries have no openings.—*In battery*, a term signifying a projecting, as a gun, into an embrasure or over a parapet in position for firing. *Cross-batteries* are two batteries which play athwart each other, forming an angle upon the object battered; an *en-écharpe-battery*, a battery which plays obliquely on the enemy's lines; an *enfilade battery*, a battery which scours or sweeps the whole line or length; an *en-revers battery*, one which plays upon the enemy's back.

Battery, in physics, a combination of several jars or metallic plates, to increase the effect of electricity and galvanism.

Battery, in criminal law, an assault by

beating or wounding another. The least touching or meddling with the person of another against his will may be held to constitute a battery.

Batthyanyi (bät-yän'yē), one of the oldest and most celebrated Hungarian families, traceable as far back as the Magyar invasion of Pannonia in the ninth century. Among later bearers of the name have been —COUNT CASIMIR BATTHYANYI, who was associated with Kossuth, was minister of foreign affairs in Hungary during the insurrection of 1849, and died in Paris 1854; COUNT LOUIS BATTHYANYI, born 1809, of another branch of the family, was leader of the opposition in the Hungarian diet until the breaking out of the commotions of 1848, when he took an active part in promoting the national cause; but on the entry of Windischgrätz into Pesth he was arrested and shot, 1849.

Battle, a combat between two armies. In ancient times and the middle ages the battle-ground was often chosen by agreement, and the battle was a mere trial of strength, a duel *en gros*; and as the armies of the ancients were imperfectly organized, and the combatants fought very little at a distance, after the battle had begun manœuvres were much more difficult, and troops almost entirely beyond the control of the general. Under these circumstances the battle depended almost wholly upon the previous arrangements and the valour of the troops. In modern times, however, the finest combinations, the most ingenious manœuvres, are rendered possible by the better organization of the armies, and it is the skill of the general rather than the courage of the soldier that now determines the event of a battle. Battles are distinguished as *offensive* or *defensive* on either side, but there is a natural and ready transition from one method to the other. As a rule the purely defensive attitude is condemned by tacticians except in cases where the only object desirable is to maintain a position of vital consequence, the weight of precedent being in favour of the dash and momentum of an attacking force even where opposed to superior forces. Where the greatest generals have acted upon the defensive, it has almost always been with the desire to develop an opportunity to pass to the offensive, and having discovered their opponent's hand, to marshal against the enemy, exhausted with attack, the whole strength of

their resources. Napoleon won more than one great victory by this method, and Wellington's reputation was largely based upon his skill in defensive-offensive operations. Tacticians have divided a battle into three periods: those of disposition, combat, and the decisive moment. In some measure they require distinct qualities in a commander, the intellect which can plot a disposition being by no means always of the prompt judgment passing to instant action which avails itself of the crucial moment to crush an enemy.

Battle, a town, England, county of Sussex, so named from the battle of Hastings being fought here. An abbey built by William the Norman has disappeared, but important remains of a subsequent building exist on the same site; and there is an old church of great interest. Pop. 1891, 3153.

Battle (or **BATTEL**), **WAGER OF**, an obsolete method, according to English law, of deciding civil or criminal cases by personal combat between the parties or their champions in presence of the court. A woman, a priest, a peer, or a person physically incapable of fighting could refuse such a trial. It was not abolished till 1818, but had long previously been in abeyance.

Battle-axe, a weapon much used in war in the early part of the middle ages among knights. It is a weapon which affords hardly any guard, and the heavier the blow given with it the more the fighter is exposed; but its use was to some extent necessitated by the resistance of iron armour to all but heavy blows. In England and Scotland the battle-axe was much employed, the Lochaber-axe remaining a formidable implement of destruction in the hands of the Highlanders to a recent period.

Battle Creek, a town of the United States, in Michigan, at the junction of the Kalamazoo and Battle Creek, with a college, and manufactures of agricultural implements, &c. Pop. 13,197.

Bat'tlement, a notched or indented parapet of a fortification, formed by a series of raised parts called *cops* or *merlons*, separated by openings called *crenelles* or *embrasures*, the soldier sheltering himself behind the merlon while he fires through the embrasure. Battlements were originally military, but were afterwards used freely in ecclesiastical and civil buildings by way of ornament, on parapets, cornices, tabernacle work, &c.

Battle-piece, a painting representing a battle. Some of the greatest pieces of this

kind are the Battle of Constantine, of which the cartoons were drawn by Raphael, and which was executed by Giulio Romano; Lebrun's Battles of Alexander; and the Battles of the Amazons, by Rubens.

Battue (ba-tii'), a method of killing game by having persons to beat a wood, copse, or other cover, and so drive the animals (pheasants, hares, &c.) towards the spot where sportsmen are stationed to shoot them.

Battus, reputed founder of the Greek colony of Cyrene in Libya about 650 B.C. There were eight rulers of the family founded by him, bearing alternately the names Battus and Arcesilaus.

Batu Khan, Mongol ruler of the western conquests of his grandfather Genghis Khan from 1224 to 1255. He overran Russia, Poland, Hungary, and Dalmatia, holding Russia for ten years.

Batum. See *Batoum*.

Baudelaire (böd-lär), **CHARLES PIERRE**, French poet, born 1821. His first work of importance was a series of translations from Poe, ranking among the most perfect translations in any literature. A volume of poems, *Les Fleurs du Mal* (1857), established his reputation as a leader of the Romanticists, though the police thought it necessary to deodorize them. Of a higher tone were his *Petits Poèmes en Prose*; followed in 1859 by a monograph on Théophile Gautier, in 1860 by *Les Paradis Artificiels* (opium and haschish studies), and in 1861 by Wagner and Tannhäuser. He died in 1867.

Baudry (bō-drē), **PAUL JACQUES AIMÉ**, a prominent modern French painter, born 1828, son of an artisan. He took the grand prix de Rome in 1850, and has exhibited many important works, of which the better known are his *Charlotte Corday* and *La Perle et la Vague*. The decoration of the *foyer* of the New Opera House at Paris was intrusted to him—an enormous work, occupying a total surface of 500 square metres, but admirably accomplished by him in eight years.

Bauer (bou'er), **BRUNO**, German philosopher, historian, and Biblical critic of the rational school; born 1809, died 1882. Wrote *Critique of the Gospel of John* (1840); *Critique of the Synoptic Gospels* (1840); *History of the French Revolution to the Founding of the Republic* (1847); *History of Germany during the French Revolution and the Rule of Napoleon* (1846); *Critique of the Gospels* (1850-51); *Critique*

of the Pauline Epistles (1850); Philo, Strauss, Renan, and Primitive Christianity (1874); &c.

Bauhin (bō-an), GASPARD, born at Basel in 1560; in 1580 elected to the Greek chair at Basel, and in 1589 to that of anatomy and botany. He died in 1624. His fame rests chiefly on his *Pinax Theatri Botanici* and *Theatrum Botanicum*. Linnæus gave his name to a genus of plants. See *Bauhinia*.

Bauhin'ia, a genus of plants, order Leguminosæ, usually twiners, found in the woods of hot countries, and often stretching from tree to tree like cables. Many are showy and interesting. The bark of *B. variegata* is used in tanning; the bast fibres of some Indian species are made into ropes and twine.

Baumgarten (boum'gär-tn), ALEXANDER GOTTLIEB, a German philosopher, born in 1714 at Berlin; in 1740 was made professor of philosophy at Frankfort-on-the-Oder, and died there in 1762. He is the founder of æsthetics as a science, and the inventor of this name. His ideas were first developed in his *De Nonnullis ad Poema pertinentibus* (1735), and afterwards in the two volumes of his uncompleted *Æsthetica*, published 1750-58.

Baur (bour), FERDINAND CHRISTIAN, German theologian, founder of the 'Tübingen School of Theology,' born in 1792. The publication of his first work, *Symbolism and Mythology, or the Natural Religion of Antiquity*, in 1824-25, led to his appointment as professor in the evangelical faculty of Tübingen University, a position occupied by him till his death in 1860. His chief works in the department of the history of Christian dogma are: *The Christian Gnosis, or the Christian Philosophy of Religion* (1835); *The Christian Doctrine of the Atonement* (1838); *The Christian Doctrine of the Trinity and the Incarnation* (1841-3); *the Compendium of and Lectures on the History of Christian Dogmas* (1847, 1865). To the department of New Testament Criticism and the Early History of Christianity belong the *So-called Pastoral Epistles of the Apostle Paul* (1835); *Paul the Apostle of Jesus Christ* (1845); *Critical Inquiries Concerning the Canonic Gospels* (1847); *A History of Christian Doctrine to the End of the Eighteenth Century* (1853-63). Baur's views in regard to the church of the earliest times and the New Testament Scriptures have been very influential. He saw differ-

ent and opposing tendencies at work in the church of apostolic times, and believed that the New Testament mainly took form in the second century, the only genuine writings previous to A.D. 70 being the four great Pauline epistles and Revelation.

Bautzen (bout'sen), or BUDISSLIN, German town in the kingdom of Saxony, upon a height on the right bank of the Spree, with some old and interesting buildings. The inhabitants are mostly Lutheran, and both Catholics and Protestants worship in the same cathedral. Chief manufactures: woollens, paper, gunpowder, machines. Napoleon defeated the united armies of the Russians and the Prussians at Bautzen on the 21st May, 1813. Pop. 1890, 21,516.

Bauxite (bak'sit), a clay found at Baux, near Arles in France, and exported from the north of Ireland (co. Antrim), containing a large proportion of alumina, and used as a lining for furnaces (such as Siemens's) that have to support an intense heat, and as a source of aluminium.

Bava'ria (German, *Baiern*; French, *Bavière*), a kingdom in the south of Germany, the second largest state of the empire, composed of two isolated portions, the larger comprising about eleven-twelfths of the monarchy, having the Austrian territories on the east, and Würtemberg, Baden, &c., on the west, while the smaller portion, the Pfalz or Palatinate, is separated from the other by Würtemberg and Baden, and lies west of the Rhine; total area, 29,282 sq.m. The principal divisions are: Upper Bavaria (pop. 1890, 1,103,160; chief town, Munich, capital of the kingdom, pop. 350,594); Lower Bavaria (664,798); Palatinate (728,339); Upper Palatinate and Regensburg (537,954); Upper Franconia (573,320); Middle Franconia (700,606); Lower Franconia and Aschaffenburg (618,489); Schwaben and Neuburg (668,316); total population in 1890, 5,594,982. After Munich the chief towns are Nürnberg, Augsburg, Würzburg, and Ratisbon (Regensburg). The main portion of the kingdom is in most parts hilly; in the south, where it belongs to the Alps, mountainous; but north of the Alps and south of the Danube, which flows east through the country from Ulm to Passau, there is a considerable plateau, averaging about 1600 feet above the sea-level. The south frontier is formed by a branch of the Noric Alps, offsets from which project far into the plateau; principal peaks: the Zugspitze, 10,394 ft., and the Watzmann, 9470 ft. The highest

BAVARIA.

summits on the Bohemian (Austrian) frontier, belonging to the Böhmerwald Mountains, are the Rachel, 5102 ft., and the Arber, 5185 ft. Ranges of less elevation bordering on or belonging to the country are the Fichtelgebirge in the north-east, the Frankenwald, Rhönggebirge, and Spessart in the north, and the Steigerwald and Franconian Jura in the middle. The Palatinate is traversed by the north extremity of the Vosges Mountains, the highest peak being the Königstuhl, 2162 ft. The greater part of the country belongs to the basin of the Danube, which is navigable, its tributaries on the south being the Iller, Lech, Isar, and Inn; on the north, the Würnitz, Altmühl, Nab, and Regen. The northern portion belongs to the basin of the Main, which receives the Regnitz and Saale, and is a tributary of the Rhine. The Palatinate has only small streams that flow into its boundary river the Rhine. The chief lakes of Bavaria are all on the higher part of the south plateau; the smaller within the range of the Alps. The Ammer-See is about 10 miles long by $2\frac{1}{2}$ broad, 1736 ft. above the sea; the Würm-See or Starnberger-See, about 12 miles long by 3 broad, 1899 ft.; and Chiem-See, 9 miles long by 9 to 4 broad, 1651 ft. The climate in general is temperate and healthy, though somewhat colder than the other South German states; yearly average about 47° .

As regards soil Bavaria is one of the most fertile countries in Germany, producing the various cereals in abundance, the best hops in Germany, fruit, wine, tobacco, &c., and having extensive forests. Lower Franconia (the Main valley) and the Palatinate are the great vine-growing districts. The celebrated Steinwein and Leistenwein are the produce of the slopes of the Steinberg and Marienberg at Würzburg (on the Main). The forests of Bavaria, chiefly fir and pine, yield a large revenue; much timber being annually exported, together with potash, tar, turpentine, &c. The principal mineral products are salt, coal, and iron, some of the mining works belonging to the state. The minerals worked include copper, quicksilver, manganese, cobalt, porcelain clay, alabaster, graphite. Large numbers of horses and cattle are reared, as also sheep and swine. The manufactures are individually mostly on a small scale. The principal articles manufactured are linens, woollens, cottons, leather, paper, glass, earthen and iron ware, jewelry, &c. The optical and

mathematical instruments made are excellent. A most important branch of industry is the brewing of beer, for which there are upwards of 7000 establishments, producing over 278 millions of gallons a year. A number of the people maintain themselves by the manufacture of articles in wood, and by felling and hewing timber. The trade of Bavaria is comparatively limited, the total value of goods exported annually not exceeding \$7,500,000. Principal exports: corn, timber, wine, cattle, glass, hops, fruit, beer, wooden wares, &c. The chief imports are sugar, coffee, cotton, rice, spices, dye-stuffs, silk and silk goods, lead, &c. From its position Bavaria has a considerable transit trade. The König Ludwig Canal connects the Main at Bamberg with the Altmühl a short distance above its embouchure in the Danube, thus establishing water communication between the German Ocean and the Black Sea. The railway system had a total mileage of 3485 in 1891, of which 2982 belonged to the state.

Education is in a less satisfactory condition than in most German states. There are about 7000 elementary schools, on which attendance is compulsory up to fourteen years of age. There are three universities, two of which (Munich and Würzburg) are Roman Catholic, and one (Erlangen) Protestant. In art Bavaria is best known as the home of the Nürnberg school, founded about the middle of the sixteenth century by Albert Dürer. Hans Holbein is also claimed as a Bavarian; and to these have to be added the eminent sculptors Kraft and Vischer, both born about the middle of the fifteenth century. The restoration of the reputation of Bavaria in art was chiefly the work of Ludwig I., under whom the capital became one of the most prominent seats of the fine arts in Europe. The religion of the state is Roman Catholicism, which embraces more than seven-tenths of the population, nearly three-tenths being Protestants. All citizens, whatever their creed, possess the same civil and political rights. The dioceses of Bavaria comprise two R.C. archbishoprics, Munich and Bamberg; and six bishoprics, Augsburg, Ratisbon, Eichstädt, Passau, Würzburg, and Spire.

The Bavarian crown is hereditary in the male line. The executive is in the hands of the king. The legislature consists of two chambers—one of senators, composed of princes of the royal family, the great officers

of the state, the two archbishops, the heads of certain noble families, and certain members appointed by the crown; the other of deputies, 159 in number, nominated by the electors, who are themselves elected, 1 for every 500 of the population. The lower chamber is elected for six years. The estimated revenue (1893) 306,292,271 marks; the debt (1892) 1,328,340,157 marks. Bavaria sends six members to the German Federal Council (Bundesrath) and forty-eight deputies to the Imperial Diet (Reichstag). The army (peace footing, 32,820; war footing, 112,016) is raised by conscription—every man being liable to serve from the 1st of Jan. of the year in which he completes his twentieth year. In time of peace it is under the command of the King of Bavaria, but in time of war under that of the Emperor of Germany, as commander-in-chief of the whole German army.

History.—The Bavarians take their name from the Boii, a Celtic tribe whose territory was occupied by a confederation of Germanic tribes, called after their predecessors Boiarii. These were made tributary first to the Ostrogoths, and then to the Franks; and on the death of Charlemagne his successors governed the country by lieutenants with the title of margrave, afterwards converted (in 921) into that of duke. In 1070 Bavaria passed to the family of the Guelphs, and in 1180 by imperial grant to Otho, count of Wittelsbach, founder of the still reigning dynasty. In 1623 the reigning duke was made one of the electors of the empire. Elector Maximilian II. joined in the war of the Spanish succession on the side of France, and this led, after the battle of Blenheim, 1704, to the loss of his dominions for the next ten years. His son, Charles Albert, likewise lost his dominions for a time to Austria, but they were all recovered again by Charles's son, Maximilian III. (1745). In the wars following the French revolution Bavaria was in a difficult position between France and Austria, but latterly joined Napoleon, from whom its elector Maximilian IV. received the title of king (1805), a title afterwards confirmed by the treaties of 1814 and 1815. King Maximilian I. was succeeded by his son, Ludwig (or Louis) I., under whom various circumstances helped to quicken a desire for political change. Reform being refused, tumults arose in 1848, and Ludwig resigned in favour of his son, Maximilian II., under whom certain modifications of the constitution were carried out. At his death in

1864 he was succeeded by Ludwig II. In the war of 1866 Bavaria sided with Austria, and was compelled to cede a small portion of its territory to Prussia, and to pay a war indemnity \$12,500,000. Soon after Bavaria entered into an alliance with Prussia, and in 1867 joined the Zollverein. In the Franco-German war of 1870–71 the Bavarians took a prominent part, and it was at the request of the King of Bavaria, on behalf of all the other princes and the senates of the free cities of Germany, that the King of Prussia agreed to accept the title of Emperor of Germany. Since Jan. 1871 Bavaria has been a part of the German Empire, and is represented in the Bundesrath by six, and in the Reichstag by forty-eight members. The eccentricity early displayed by Ludwig II., developed to such an extent that in June, 1886, he was placed under control, and a regency established under Prince Liutpold (Leopold). The change was almost immediately followed by the suicide of the king, and as Prince Otto, the brother and heir of the late king, was insane, the regency was continued.

Baxter, RICHARD, the most eminent of the English nonconforming divines of the seventeenth century, born in Rowton, Shropshire, 1615; ordained in 1638; parish minister of Kidderminster in 1640. The imposition of the oath of universal approbation of the doctrine and discipline of the Church of England (the *et cætera* oath) detached him from the Establishment. After the battle of Naseby he accepted the chaplaincy of Colonel Whalley's regiment. He can scarcely be said, however, to have separated as yet in spirit from the Establishment. He upheld the monarchy, condemned the execution of the king and the election of Cromwell, preached against the Covenant and against separatists and sectaries, but his piety won him the respect of all parties. At the Restoration he became king's chaplain, but declined the bishopric of Hereford, and on the passage of the Act of Uniformity threw in his lot entirely with the nonconformists. In 1685 he was arrested, refused a hearing by Jeffreys, and imprisoned. After his release he lived in retirement till his death in 1691. He left about 150 treatises, of which his *Saints' Everlasting Rest* and *Call to the Unconverted* have been the most popular.

Baxterians, followers of Baxter in respect of his attempted compromise between Calvinism and Arminianism. They reject

the doctrine of reprobation, admit a universal potential salvation, becoming actual in the case of the elect, and assert the possibility of falling from grace. Exponents: Dr. Watts and Dr. Doddridge.

Bay, the laurel-tree, noble laurel, or sweet-bay (*Laurus nobilis*); but the term is loosely given to many trees and shrubs resembling this. A fatty or fixed oil (used in veterinary medicine) and also a volatile oil is obtained from the berries but what is called 'bay-berry oil' is also obtained from the genus *Myrica* or candleberry. In N. America the fragrant-flowered *Magnolia glauca* is called sweet-bay, the red-bay being *Laurus carolinensis*, the loblolly-bay *Gordonia lasianthus*. See *Laurel*.

Bay, in geography, an indentation of some size into the shore of a sea or lake, generally said to be one with a wider entrance than a gulf.

Bay, in architecture, a term applied to a recessed division or compartment of a building, as that marked off by buttresses or pillars.

Ba'ya, the weaver-bird (*Ploceus philippinus*), an interesting East Indian passerine bird, somewhat like the bullfinch. Its nest resembles a bottle, and is suspended from the branch of a tree. The entrance is from beneath, and there are two chambers, one for the male, the other for the female. The baya is easily tamed, and will fetch and carry at command.

Bayaderes (bā-a-dērz'), the general European name for the dancing and singing girls of India, some of whom are attached to the service of the Hindu temples, while others travel about and dance at entertainments for hire. Those in the service of the temples are generally devoted to this profession (including that of prostitution) from their childhood.

Bayamo (bā-yā'mō), or ST. SALVADOR, a town in the east of Cuba, near the Cauto; pop. 12,000.

Bayard (bā-yär), PIERRE DU TERRAIL, SEIGNEUR DE, the *Chevalier sans peur et sans reproche* (knight without fear and without reproach), born in 1476 in Castle Bayard, near Grenoble, in southern France. At the age of eighteen he accompanied Charles VIII. to Italy, and in the battle at Verona took a standard. At the beginning of the reign of Louis XII., in a battle near Milan, he entered the city at the heels of the fugitives, and was taken prisoner, but dismissed by Ludovico Sforza without ransom. In

Apulia he killed his calumniator, Sotomayor, and afterwards defended a bridge over the Garigliano singly against the Spaniards, receiving for this exploit as a coat of arms a porcupine, with the motto *Vires agminis unus habet* ('one has the strength of a band'). He distinguished himself equally against the Genoese and the Venetians, and, when Julius II. declared himself against France, went to the assistance of the Duke of Ferrara. He was severely wounded at the assault of Prescia, but returned, as soon as cured, to the camp of Gaston de Foix, before Ravenna, and after new exploits was again dangerously wounded in the retreat from Pavia. In the war commenced by Ferdinand the Catholic he displayed the same heroism, and the fatal reverses which embittered the last years of Louis XII. only added to the personal glory of Bayard. When Francis I. ascended the throne he sent Bayard into Dauphiné to open a passage over the Alps and through Piedmont. Prosper Colonna lay in wait for him, but was made prisoner by Bayard, who immediately after further distinguished himself in the battle of Marignano. After his defence of Mézières against the invading army of Charles V. he was saluted in Paris as the saviour of his country, receiving the honour paid to a prince of the blood. His presence reduced the revolted Genoese to obedience, but failed to prevent the expulsion of the French after the capture of Lodi. In the retreat the safety of the army was committed to Bayard, who, however, was mortally wounded by a stone from a blunderbuss in protecting the passage of the Sesia. He kissed the cross of his sword, confessed to his squire, and died, April 30, 1524. He was buried in a church of the Minorites, near Grenoble.

Bayard, THOMAS FRANCIS, statesman, born at Wilmington, Del., 1828, educated at Flushing, studied law, and in 1868 was elected U. S. Senator, where he served till 1884. In 1885 he was made Secretary of State in Mr. Cleveland's cabinet. March 30, 1893, was appointed ambassador extraordinary and plenipotentiary to England.

Bay City, an American city, Mich., on the E. side of Saginaw River, near its mouth in Saginaw Bay, Lake Huron. Chief articles of trade, lumber and salt. Pop. 27,839.

Bayeux (bā-yeu), an ancient town, France, dep. Calvados, 16 miles N.W. of Caen, with manufactures of lace, calico, and porcelain. In its cathedral, said to be the oldest in

BAYEUX TAPESTRY — BAYLE.

Normandy, was preserved for a long time the famous Bayeux tapestry. (See next art.) Pop. 7178.

Bayeux Tapestry, so called because it was originally found in the cathedral of Bayeux, in the public library of which town it is still preserved. It is supposed to have been worked by Matilda, queen of William

the Conqueror, and to have been presented by Odo, bishop of Bayeux, the half-brother of William, to the church in which it was found. It is 214 feet in length and 20 inches in breadth, and is divided into seventy-two compartments, the subject of each scene being indicated by a Latin inscription. These scenes give a pictorial history of the



The Coronation of Harold—Men wonder at the Star—Harold on his Throne.



The Battle of Hastings.—Portion of the Bayeux Tapestry.

invasion and conquest of England by the Normans, beginning with Harold's visit to the Norman court, and ending with his death at Hastings.

Bay Islands, an island group, Bay of Honduras, off N. coast of state of Honduras, incorporated as a British colony in 1852, and ceded to Honduras in 1856. The largest is Ruatan, 30 miles long. Pop. about 5000.

Bayle (bāl), PIERRE, French critic and miscellaneous writer, the son of a Calvinist preacher, born at Carlat (Languedoc) in 1647, died at Rotterdam 1706. He studied at Toulouse, and was employed for some time as a private tutor at Geneva and Rouen. He went to Paris in 1674,

and soon after was appointed professor of philosophy at Sedan. Six years after he removed to Rotterdam, where he filled a similar chair. The appearance of a comet, in 1680, which occasioned an almost universal alarm, induced him to publish, in 1682, his *Pensées Diverses sur la Comète*, a work full of learning, in which he discussed various subjects of metaphysics, morals, theology, history, and politics. It was followed by his *Critique Générale de l'Histoire du Calvinisme de Maimbourg*. This work excited the jealousy of his colleague, the theologian Jurieu, and involved Bayle in many disputes. In 1684 he undertook a periodical work, *Nouvelles de la République des Lettres*, containing notices

of new books in theology, philosophy, history, and general literature. This publication, which lasted for three years, added much to his reputation as a philosophical critic. In 1693 Jurieu succeeded in inducing the magistrates of Rotterdam to remove Bayle from his office. He now devoted all his attention to the composition of his *Dictionnaire Historique et Critique*, which he first published in 1696, in two vols. fol. This work, much enlarged, has passed through many editions. It is a vast storehouse of facts, discussions, and opinions, and though it was publicly censured by the Rotterdam consistory for its frequent impurities, its pervading scepticism, and tacit atheism, it long remained a favourite book both with literary men and with men of the world. The articles in his dictionary, in themselves, are generally of little value, and serve only as a pretext for the notes, in which the author displays, at the same time, his learning and the power of his logic. The best editions are that of 1740, in four vols. fol. (Amsterdam and Leyden), and that in sixteen vols., published in 1820–24 at Paris.

Bay-leaf, the leaf of the sweet-bay or laurel-tree (*Laurus nobilis*). These leaves are aromatic, and are used in cookery and confectionery. See *Bay*.

Baylen (bī-len'). Same as *Bailen*.

Bayly (bā'li), THOMAS HAYNES, English poet, novelist, dramatist, and miscellaneous writer, born 1797, died 1839. Educated at Oxford, and intended for the church. He wrote thirty-six pieces for the stage, most of which were successful; several novels: *Aylmers*, *Kindness in Women*, &c.; and numerous songs. As a song writer he was most prolific and most popular: *The Soldier's Tear*, *We met—'twas in a Crowd*, and a few others, are still well known.

Bay Mahogany, that variety of mahogany exported from Honduras. It is softer and less finely marked than the variety known as Spanish mahogany, but is the largest and most abundant kind.

Baynes (bānz), THOMAS SPENCER, LL.D., born at Wellington, Somerset, in 1823, died suddenly in London, 1887. He studied under Sir William Hamilton at Edinburgh, and acted as his class assistant from 1851 to 1855. From 1857 to 1863 he was resident in London, where he acted as examiner in logic and mental philosophy in the University of London, and as assistant editor on the *Daily News*. In 1864 he was appointed

to the chair of logic, rhetoric, and metaphysics in St. Andrews University, a post he held till his death. In 1873, when he became editor of the ninth edition of the *Encyclopædia Britannica*, his wide acquaintance with men of letters and learning assisted him greatly in the selection of suitable contributors. He translated the *Port Royal Logic*, and was a frequent contributor to the principal reviews and literary journals.

Bay or Islands, a large, deep, and safe harbour on the N.E. coast of the N. Island of New Zealand. On it is Kororarika, the first European settlement in New Zealand. —Also a large bay formed by the Gulf of St. Lawrence, on the west coast of Newfoundland.

Bay-oil, oil from the berries of the bay or laurel. See *Bay*.

Bay'onet, a straight, sharp-pointed weapon, generally triangular, intended to be fixed upon the muzzle of a rifle or musket, which is thus transformed into a thrusting weapon: probably invented about 1640, in Bayonne. About 1690 the bayonet began to be fastened by means of a socket to the outside of the barrel, instead of being inserted as formerly in the inside. A variety of the bayonet, called the sword-bayonet, is now pretty widely used in modern armies, especially for the short rifles of the light infantry, the carbines of the artillery, &c.

Bayonne (bā-yon), a well-built fortified town, the largest in the French dep. Basses-Pyrénées, at the confluence of the Nive and the Adour, about 2 miles from their mouth in the Bay of Biscay; with a citadel commanding the harbour and city, a cathedral—a beautiful ancient building, ship-building and other industries, and a considerable trade. Among the lower class the Basque language is spoken. Catharine de' Medici had an important interview with the Duke of Alba in Bayonne, June, 1565, at which it is said the massacre of St. Bartholomew was arranged. It was also the scene of the abdication of Charles IV. of Spain in favour of Napoleon (1808). In 1814 the British forced the passage of the Nive and invested the town, from which the French made a desperate but unsuccessful sortie. Pop. 23,120.

Bayonne, a suburb of New York, in Hudson Co., New Jersey. Pop. 19,033.

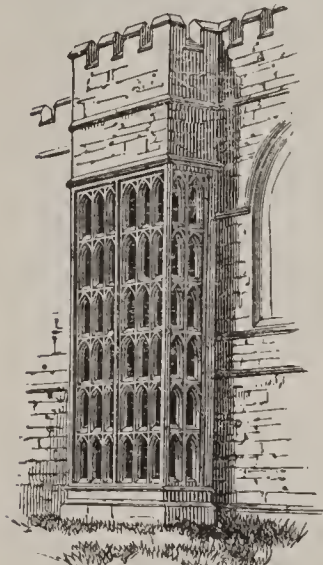
Bayou (bā-yö'), in the S. States of North America, a stream which flows from a lake or other stream: frequently used as synonymous with creek or tidal channel.

Bayreuth (bī'roit). See *Baireuth*.

Bay Rum, a spirit obtained by distilling the leaves of *Myrica acris*, or other West Indian trees of the same genus. It is used for toilet purposes, and as a liniment in rheumatic affections.

Bay-salt, a general term for coarse-grained salt, but properly applied to salt obtained by spontaneous or natural evaporation of sea-water in large shallow tanks or *bays*.

Bay-window, a window forming a recess or bay in a room, projecting outwards, and rising from the ground or basement on a plan rectangular, semi-octagonal, or semi-hexagonal, but always straight-sided. The term is, however, also often employed to designate a *bow-window*, which more properly forms the segment of a circle, and an *oriel-window*, which is supported on a kind of bracket, and is



Bay-window.

usually on the first-floor.

Baza (bā'thā), an old town of Spain, Andalusia, prov. of Granada, formerly a large and flourishing city. In 1810 the French, under Marshal Soult, here defeated the Spaniards under Generals Blake and Freire. Pop. 10,133.

Bazaar. See *Bazar*.

Bazaine (bā-zān), FRANÇOIS ACHILLE, French general, born 1811. He served in Algeria, in Spain against the Carlists, in the Crimean War, and joined the Mexican expedition as general of division in 1862, and in 1864 was made a marshal of France. He commanded the third army corps in the Franco-German war, when he capitulated at Metz, after a seven weeks' siege, with an army of 175,000 men. For this act he was tried by court-martial in 1871, found guilty of treason, and condemned to death. This sentence was commuted to twenty years' seclusion in the Isle St. Marguerite, from which he escaped and retired to Spain.

Bazar', or BAZAAR', in the East an exchange, market-place, or place where goods are exposed for sale, usually consisting of small shops or stalls in a narrow street or

series of streets. These bazar-streets are frequently shaded by a light material laid from roof to roof, and sometimes are arched over. Marts for the sale of miscellaneous



The Great Bazar, Constantinople.

articles, chiefly fancy goods, are now to be found in most European cities bearing the name of *bazars*. The term bazar is also applied to a sale of miscellaneous articles, mostly of fancy work, and contributed gratuitously, in furtherance of some charitable or other purpose.

Bazar'jik, a town of Bulgaria, south-east of Silistria. Pop. 9545.

Bazigars', a tribe of Indians dispersed throughout the whole of Hindustan mostly in wandering tribes. They are divided into seven castes; their chief occupation is that of jugglers, acrobats, and tumblers, in which both males and females are equally skilful. They present many features analogous to the gypsies of Europe.

Bazoché (bā-zosh'), or BASOCHE (a corruption of *Basilica*), a brotherhood formed by the clerks of the parliament of Paris at the time it ceased to be the grand council of the French king. They had a king, chancellor, and other dignitaries; and certain privileges were granted them by Philip the Fair early in the fourteenth century, as also by subsequent monarchs. They had an annual festival, having as a principal feature dramatic

performances in which satirical allusions were freely made to passing events. The representation of these farces or satires was frequently interdicted, but their development had a considerable effect on the dramatic literature of France.

Bdellium (del'i-um), an aromatic gum resin brought chiefly from Africa and India, in pieces of different sizes and figures, externally of a dark reddish brown, internally clear, and not unlike glue. To the taste it is slightly bitterish and pungent; its odour is agreeable. It is used as a perfume and a medicine, being a weak deobstruent. Indian bdellium is the produce of *Balsamodendron Roxburghii*; African of *B. africanum*; Egyptian bdellium is obtained from the doum palm; and Sicilian is produced by *Daucus gummifer*, a species of the genus to which the carrot belongs. The bdellium mentioned in Gen. ii. was apparently a precious stone, perhaps a pearl.

Beaches, **RAISED**, a term applied to those long terraced level pieces of land, consisting of sand and gravel, and containing marine shells, now, it may be, a considerable distance above and away from the sea, but bearing sufficient evidences of having been at one time sea-beaches. In Scotland such a terrace has been traced extensively along the coasts at about 25 feet above the present sea-level.

Beachy Head, a promontory in the south of England, on the coast of Sussex, rising 575 feet above sea-level, with a revolving light, visible in clear weather from a distance of 28 miles. A naval battle took place here, June 30, 1690, in which a French fleet under Tourville defeated an English and Dutch combined fleet under Lord Torrington.

Beacon (bē'kon), an object visible to some distance, and serving to notify the presence of danger; commonly applied to a fire-signal set on a height to spread the news of hostile invasion or other great event; and also applied to a mark or object of some kind placed conspicuously on a coast or over a rock or shoal at sea for the guidance of vessels, often an iron structure of considerable height.

Beaconsfield (bē'konz-fēld), a village of Buckinghamshire, the parish church of which contains the remains of Edmund Burke, whose seat was in the neighbourhood; while a marble monument to the poet Waller, who owned the manor, is in the churchyard. It gave the title of earl to the English statesman and novelist Benjamin Disraeli.

Beaconsfield, **BENJAMIN DISRAELI**, **EARL OF**, an eminent English statesman and novelist, of Jewish extraction; eldest son of Isaac D'Israeli, author of the *Curiosities of Literature*; born in London in 1804, died



Lord Beaconsfield.

there in 1881, buried at Hughenden. He attended for a time a private school, and was first destined for the law, but showing a decided taste for literature he was allowed to follow his inclination. In 1826 he published *Vivian Grey*, his first novel; and subsequently travelled for some time, visiting Italy, Greece, Turkey, and Syria, and gaining experiences which were afterwards reproduced in his books. His travels and impressions are embodied in a volume of letters addressed to his sister and his father. In 1831 another novel, *The Young Duke*, came from his pen. It was followed at short intervals by *Contarini Fleming*, *Alroy*, *Henrietta Temple*, *Venetia*, *The Revolutionary Epic* (a poem), &c. In 1832, and on two subsequent occasions, he appeared as candidate for the representation of High Wycombe, with a programme which included vote by ballot and triennial parliaments, but was unsuccessful. His political opinions gradually changed: in 1835 he unsuccessfully contested Taunton as a Tory. In 1837 he gained an entrance to the House of Commons, being elected for Maidstone. His first speech in the house was treated with ridicule; but he finished with the prophetic declaration that the time would come when they would hear him. During his first years in parliament he was a supporter

i Peel; but when Peel pledged himself to abolish the corn-laws, Disraeli became the leader of the protectionists. About this time he became a leader of what was known as the 'Young England' party, the most prominent characteristic of which was a sort of sentimental advocacy of feudalism. This spirit showed itself in his two novels of *Coningsby* and *Sybil*, published respectively in 1844 and 1845. Having acquired the manor of Hughenden in Buckinghamshire, he was in 1847 elected for this county, and he retained his seat till raised to the peerage nearly thirty years later. His first appointment to office was in 1852, when he became chancellor of the exchequer under Lord Derby. The following year, however, the ministry was defeated. He remained out of office till 1858, when he again became chancellor of the exchequer, and brought in a reform bill which wrecked the government. During the time the Palmerston government was in office Mr. Disraeli led the opposition in the lower house with conspicuous ability and courage. In 1866 the Liberals resigned, and Derby and Disraeli came into power, the latter being again chancellor of the exchequer. They immediately brought in, and carried, after a violent and bitter struggle, a Reform Bill on the basis of household suffrage. In 1868 he became premier on the resignation of Lord Derby, but his tenure of office was short. In 1874 he again became prime-minister with a strong Conservative majority, and he remained in power for six years. This period was marked by his elevation to the peerage in 1876 as Earl of Beaconsfield, and by the prominent part he took in regard to the Eastern question and the conclusion of the Treaty of Berlin in 1878. In 1880 parliament was rather suddenly dissolved, and the new parliament showing an overwhelming Liberal majority, he resigned office, though he still retained the leadership of his party. Within a few months of his death the publication of a novel called *Endymion* (his last, *Lothair*, had been published ten years before) showed that his intellect was still vigorous. Among others of his writings besides those already mentioned are: *A Vindication of the English Constitution*, 1834; *Alarcos, a Tragedy*, 1839; and *Lord George Bentinck, a Political Biography*, 1852.

Bead (bēd), originally a prayer; then a small perforated ball of gold, pearl, amber, glass, or the like, to be strung on a thread,

and used in a rosary by Roman Catholics in numbering their prayers, one bead being passed at the end of each ejaculation or short prayer; latterly any such small ornamental body. Glass beads are now the most common sort; they form a considerable item in the African trade.—In architecture and joinery the bead is a small round moulding. It is of frequent occurrence in architecture, particularly in the classical styles, and is used in picture-frames and other objects carved in wood.—*St. Cuthbert's Beads*, the popular name of the detached and perforated joints of encrinites.

Beadle (bē'dl), an officer in a university, whose chief business is to walk with a mace in a public procession: also, a parish officer whose business is to punish petty offenders, and a church officer with various subordinate duties, as waiting on the clergyman, keeping order in church, attending meetings of vestry or session, &c.

Bead-snake (*Elaps fulvius*), a beautiful snake of North America, inhabiting cultivated grounds, especially plantations of the sweet-potato, and burrowing in the ground. It is finely marked with yellow, carmine, and black. Though it possesses poison-fangs it never seems to use them.

Beagle (bē'gl), a small hound, formerly kept to hunt hares, now almost superseded by the harrier, which sometimes is called by its name. The beagle is smaller than the harrier, compactly built, smooth-haired, and with pendulous ears. The smallest of them are little larger than the lap-dog.

Beam, a long straight and strong piece of wood, iron, or steel, especially when holding an important place in some structure, and serving for support or consolidation; often equivalent to *girder*. In a balance it is the part from the ends of which the scales are suspended. In a loom it is a cylindrical piece of wood on which weavers wind the warp before weaving; also, the cylinder on which the cloth is rolled as it is woven. In a ship one of the strong transverse pieces stretching across from one side to the other to support the decks and retain the sides at their proper distance: hence a ship is said to be 'on her beam ends' when lying over on her side.

Beam-tree (*Pyrus aria*), a tree of the same genus as the apple, mountain-ash, and service-tree, having berries that are edible when quite mellow, and yielding a hard and fine-grained wood, used for axle-trees and other purposes.

BEAN — BEAR.

Bean, a name given to several kinds of leguminous seeds and the plants producing them, probably originally belonging to Asia. They belong to several genera, particularly to *Faba*, garden and field bean; *Phaseolus*, French or kidney bean; and *Dolichos*, tropical bean. The common bean (*F. vulgaris*) is cultivated both in fields and gardens as food for man and beast. There are many varieties, as the mazagan, the Windsor, the long-pod, &c., in gardens, and the horse or tick bean in fields. The soil that best suits is a good strong clay. The seed of the Windsor is fully an inch in diameter; the horse-bean is much less, often not much more than half an inch in length and three-eighths of an inch in diameter. Beans are very nutritious, containing 36 per cent of starch and 23 per cent of nitrogenous matter called legumin, analogous to the caseine in cheese. The bean is an annual, from 2 to 4 feet high. The flowers are beautiful and fragrant. The *kidney-bean*, *French bean*, or *haricot* is the *Phaseolus vulgaris*, a well-known culinary vegetable. There are two principal varieties, annual dwarfs and runners. The beans cultivated in America and largely used as articles of food belong to the genus *Phaseolus*. The *scarlet-runner bean* (*Phaseolus coccineus*), a native of Mexico, is cultivated on account of its long rough pods and its scarlet flowers.—*St. Ignatius' bean* is not really a bean, but the seed of a large climbing shrub, of the order Loganiaceæ, nearly allied to the species of *Strychnos* which produces nux vomica.

Bean-goose (*Anser segētum*), a species of wild goose, a migratory bird which arrives in Britain in autumn and retires to the north in the end of April, though some few remain to breed. Being rather less than the common wild goose, it is sometimes called the *small gray goose*.

Bean-king, the person chosen king in Twelfth Night festivities in virtue of having got the piece of cake containing the bean buried in the cake for this purpose.

Bear, the name of several large plantigrade carnivorous mammals of the genus *Ursus*. The teeth are forty-two in number, as in the dog, but there is no carnassial or sectorial tooth, and the molars have a more tubercular character than in other carnivores. The eyes have a nictitating membrane, the nose is prominent and mobile, and the tail very short. The true bears are about ten in number, natives chiefly of Europe, Asia, and N. America. They gener-

ally lie dormant in their den during the winter months. The brown or black bear of Europe is the *Ursus arctos*. It is a native of almost all the northern parts of Europe



Brown Bear (*Ursus arctos*)

and Asia and was at one time common in the British islands. It feeds on fruits, roots, honey, ants, and, in case of need, on mammals. It sometimes reaches the length of 7 feet, the largest specimens being found furthest to the north. It lives solitarily. The American black bear is the *U. americanus*, with black shining hair, and rarely above 5 feet in length. It is a great climber, is less dangerous than the brown bear, and is hunted for its fur and flesh. It is very amusing in captivity. The grizzly bear (*U. ferox* or *horribilis*) is an inhabitant of the Rocky Mountains; it is a ferocious animal, sometimes 9 feet in length, and has a bulky and unwieldy form, but is nevertheless capable of great rapidity of



Polar Bear (*Ursus maritimus*).

motion. The extinct cave-bear (*U. spelæus*) seems to have been closely akin to the grizzly. The Siberian bear (*U. collāris*) is perhaps a variety of the brown bear. The polar or white bear (*U. maritimus*) is an

animal possessed of great strength and fierceness. It lives in the polar regions, frequents the sea, feeds on fish, seals, &c., and usually is 7 to 8 feet in length. The Malayan or coco-nut palm bear (*U. malayānus*) is perhaps the smallest of the bears. It inhabits Cochin-China, Nepaul, the Sunda Islands, &c., lives exclusively on vegetable food, and is an expert climber. It is called also sun-bear and bruang. The Indian black bear or sloth-bear of India and Ceylon (*U. labiātus*) is reputed to be a fierce and dangerous animal.

Bear, or **BERE**, a species of barley (*Hordeum hexastichum*), having six rows in the ear, cultivated in Scotland and the north of England.

Bear, **GREAT** and **LITTLE**, the popular name of two constellations in the northern hemisphere. The Great Bear (*Ursa Major*) is situated near the pole. It is remarkable for its well-known seven stars, by two of which, called the Pointers, the pole-star is always readily found. These seven stars are popularly called the *Wagon*, *Charles's Wain*, or the *Plough*. The Little Bear (*Ursa Minor*) is the constellation which contains the pole-star. This constellation has seven stars placed together in a manner resembling those in the Great Bear.

Bear-baiting, the sport of baiting bears with dogs, formerly one of the established amusements, not only of the common people, but of the nobility and even royalty itself. The places where bears were publicly baited were called bear-gardens.

Bearberry (*Arctostaphylos uva-ursi*), an evergreen shrub of the heath family growing on the barren moors of Scotland, Northern Europe, Siberia, and N. America. The leaves, under the name of *uva ursi*, are used in medicine as an astringent and tonic.

Beard, the hair round the chin, on the cheeks, and the upper lip, which is a distinction of the male sex and of manhood. It differs from the hair on the head by its greater hardness and its form. Some nations have hardly any, others a great profusion. The latter generally consider it as a great ornament; the former pluck it out; as, for instance, the American Indians. The beard has often been considered as a mark of the sage and the priest. Moses forbade the Jews to shave their beards. With the ancient Germans the cutting off another's beard was a high offence. Even now the beard is regarded as a mark of great dignity

among many nations in the East, as the Turks. Alexander the Great introduced shaving among the Greeks, by ordering his soldiers to wear no beards; among the Romans it was introduced in B.C. 296. The custom of shaving is said to have come into use in modern times during the reigns of Louis XIII. and XIV. of France, both of whom ascended the throne without a beard. Till then fashion had given divers forms of moustaches and beards. It is only in comparatively recent times that beards and moustaches have again become common.

Beard-grass, a name given to two well-known British grasses of the genus *Polypogon* from the bearded appearance of the panicles.

Beard-moss (*Usnea barbata*), a lichen of gray colour, forming a shaggy coat on many forest trees.

Bearing, the direction or point of the compass in which an object is seen, or the situation of one object in regard to another, with reference to the points of the compass. Thus, if from a certain situation an object is seen in the direction of north-east, the *bearing* of the object is said to be N.E. from the situation.—*To take bearings*, to ascertain on what point of the compass objects lie.

Bear Lake, **GREAT**, an extensive sheet of fresh water in the North-west Territory of Canada, between about 65° and 67° 32' N. lat.; and under the 120th degree of W. lon.; of irregular shape; area about 14,000 sq. miles. The water is very clear and the lake abounds in fish.—**BEAR-LAKE RIVER**, the outlet at the S.W. extremity of Great Bear Lake, runs S.W. for 70 miles and joins the Mackenzie River.

Béarn (bā-ārn), one of the provinces into which France was formerly divided, now chiefly included in the department of Lower Pyrenees. Pau is the chief town. There is a peculiar and well-marked dialect—the Béarnese—spoken in this district, which has much more affinity with the Spanish than with the French.

Bear-pit, a deep, open pit with perpendicular walls, built in a zoological garden for keeping bears, and having in the centre a pole in which they may exercise their climbing powers.

Bear River, a river of the United States, 400 miles long; rises in the north of Utah, and flows northward into Idaho; turns abruptly southward, re-enters Utah, and empties into Great Salt Lake.

Bear's-grease, the fat of bears, esteemed as of great efficacy in nourishing and promoting the growth of hair. The unguents sold under this name, however, are in a great measure made of hog's lard or veal fat, or a mixture of both, scented and slightly coloured.

Beas, river of India. See *Bias*.

Beat, in music, the beating or pulsation resulting from the joint vibrations of two sounds of the same strength, and all but in unison. Also a short shake or transient grace-note struck immediately before the note it is intended to ornament.

Beatification, in the Roman Catholic Church, an act by which the pope declares a person beatified or blessed after his death. It is the first step to canonization, that is, the raising one to the honour and dignity of a saint. No person can be beatified till fifty years after his or her death. All certificates or attestations of virtues and miracles, the necessary qualifications for saintship, are examined by the Congregation of Rites. This examination often continues for several years; after which his holiness decrees the beatification, and the corpse and relics of the future saint are exposed to the veneration of all good Christians.

Beating the Bounds, the periodical survey or perambulation by which the boundaries of parishes in England are preserved. It is, or was, the custom that the clergyman of the parish, with the parochial officers and the boys of the parish school, should march to the boundaries, which the boys struck with willow rods. A similar ceremony in Scotland is called *riding the marches*.

Bea'ton, DAVID, Archbishop of St. Andrews, and cardinal; born 1494. Pope Paul III. raised him to the rank of cardinal in December, 1538. On the death of his uncle, Archbishop James Beaton, he succeeded him in the see of St. Andrews in 1539. After the accession of Mary he became Chancellor of Scotland, and distinguished himself by his zeal in persecuting members of the Reformed party, among the rest the famous Protestant preacher George Wishart, whose sufferings at the stake he viewed from his window with apparent exultation. At length a conspiracy was formed against him, and he was assassinated at his own castle of St. Andrews, on the 29th May, 1546. His private character was marked by pride, cruelty, and licentiousness.

Beatrice Portinari (bā-ā-trē'chā por-tē-nā'rē), the poetical idol of Dante; born about 1216, died 1290; the daughter of a wealthy citizen of Florence, and wife of Simone de Bardi. She was but eight years of age, and Dante nine, when he met her first at the house of her father. He altogether saw her only once or twice, and she probably knew little of him. The story of his love is recounted in the *Vita Nuova*, which was mostly written after her death.

Beattie (bē'ti), JAMES, a Scottish poet and miscellaneous writer; born at Laurencekirk, Kincardineshire, in 1735; died at Aberdeen 1803. He studied at Marischal College, Aberdeen, for four years, and received the M.A. degree. In 1753 he was appointed schoolmaster at Fordoun, a few miles from his native place; from whence he obtained a mastership in the Grammar School of Aberdeen, and ultimately was installed professor of moral philosophy and logic in Marischal College. In 1760 he published a volume of poems, which he subsequently endeavoured to buy up, considering them unworthy of him. In 1765 he published a poem, the *Judgment of Paris*, and in 1770 his celebrated *Essay on Truth*, for which the University of Oxford conferred on him the degree of LL.D.; and George III. honoured him, when on a visit to London, with a private conference and a pension. He next published in 1771 the first book of his poem the *Minstrel*, and in 1774 the second; this is the only work by which he is now remembered. In 1776 he published dissertations on Poetry and Music, Laughter and Ludicrous Composition, &c.; in 1783 *Dissertations, Moral and Critical*; in 1786 *Evidences of the Christian Religion*; and in 1790-93 *Elements of Moral Science*. His closing years were darkened by the death of his two sons.

Beattie, WILLIAM, M.D., Scottish physician, poet, and miscellaneous writer; born in 1793, died at London 1875. He was author of the standard *Life of Thomas Campbell*, whose intimate friend he was; published several poems, including *John Huss*, the *Heliotrope*, and *Polynesia*; wrote a series of descriptive and historical works, beautifully illustrated by his friend and fellow-traveller, W. H. Bartlett, on *Switzerland*, *Scotland*, *The Waldenses*, *The Danube*, *Castles and Abbeys of England*, &c.

Beatrice, Gage county, Neb., 43 miles south of Lincoln: several mills and stone quarry. Pop. 13,836.

Beaucaire (bō-kār), a small, well-built, commercial city of Southern France, dep. Gard, on the Rhone opposite Tarascon, with which it communicates by a fine suspension-bridge. It is chiefly famous for its great fair (founded in 1217), held yearly from the 21st to the 28th July. Pop. 9724.

Beauchamp (bō-shān), ALPHONSE DE, French historian and publicist, born at Monāco 1767, died at Paris 1832. Under the Directory he had the surveillance of the press, a position which supplied him with materials for his History of La Vendée. He contributed to the *Moniteur* and the *Gazette de France*. Among his chief works are the History of the Conquest of Peru, the History of Brazil, and the Life of Louis XVIII. The *Mémoires* of Fouché is also with good reason ascribed to him.

Beaufort (bō'fort), HENRY, cardinal, natural son of John of Gaunt and half-brother of Henry IV., king of England, born 1377, died 1447; was made Bishop of Lincoln, whence he was translated to Winchester. He repeatedly filled the office of lord-chancellor, and took part in all the most important political movements of his times.

Beaugency (bō-zhān-sē), an ancient town, France, dep. Loiret, on the Loire, of some historical interest. General Chanzy was defeated here by the Grand-duke of Mecklenburg, 7th–8th December, 1870. Pop. 5029.

Beauharnais (bō-ār-nā), ALEXANDRE, VISCOUNT, was born in 1760 in Martinique. He married Joséphine Tascher de la Pagerie, who was afterwards the wife of Napoleon. At the breaking out of the French revolution he was chosen a member of the National Assembly, of which he was for some time president. In 1792 he was general of the army of the Rhine. He was falsely accused of having promoted the surrender of Mainz, and was sentenced to death July 23, 1794.

Beauharnais, EUGÈNE DE, Duke of Leuchtenberg, Prince of Eichstädt, and Viceroy of Italy during the reign of Napoleon, was born 1781, died at Munich 1824. He was the son of Alexandre Beauharnais and Joséphine, afterwards wife of Napoleon and Empress of France. After his father's death he joined Hoche in La Vendée, and subsequently studied for a time in Paris. He accompanied Napoleon to Egypt in 1798; rose rapidly in the army; was appointed viceroy of Italy in 1805; and

married a daughter of the King of Bavaria in 1806. He administered the government of Italy with great prudence and moderation, and was much beloved by his subjects. In the Russian campaign he commanded the third *corps d'armée*, and greatly distinguished himself. To him and to Ney France was mainly indebted for the preservation of the remains of her army during the retreat from Moscow. After the battle of Lützen of May 2, 1813, where, by surrounding the right wing of the enemy, he decided the fate of the day, he went to Italy, which he defended against the Austrians until the deposition of Napoleon. After the fall of Napoleon he concluded an armistice, by which he delivered Lombardy and all Upper Italy to the Austrians. He then went immediately to Paris, and thence to his father-in-law at Munich, where he afterwards resided.—His sister HORTENSE EUGÉNIE, Queen of Holland, was born in 1783, died in 1837. She became Queen of Holland by marrying Louis Bonaparte, and after Louis's abdication of the throne she lived apart from him. She wrote several excellent songs, and composed some deservedly popular airs, among others the well-known *Partant pour la Syrie*. Napoleon III. was her third and youngest son.

Beaumarchais (bō-mär-shā), PIERRE AUGUSTIN CARON DE, a French wit and dramatist, was born at Paris in 1732, died 1799. He was the son of a watchmaker named Caron, whose trade he practised for a time. He early gave striking proofs of his mechanical and also of his musical talents; attained proficiency as a player on the guitar and harp, and was appointed harp-master to the daughters of Louis XV. By a rich marriage (after which he added 'de Beaumarchais' to his name) he laid the foundation of the immense wealth which he afterwards accumulated by his speculations, and which was also increased by a second marriage. In the meantime he occupied himself with literature, and published two dramas—*Eugénie* in 1767 and *Les Deux Amis* in 1770. He first really distinguished himself by his *Mémoires* (Paris, 1774), or statements in connection with a lawsuit, which by their wit, satire, and liveliness entertained all France. The *Barber of Seville* (1775) and the *Marriage of Figaro* (1784) have given him a permanent reputation. His last work was *Mes Six Époques*, in which he relates the dangers to which he was exposed in the revolution. He lost

about a million livres by his edition of the works of Voltaire (1785), and still more at the end of 1792 by his attempt to provide the French army with 60,000 muskets. He was a singular instance of versatility of talent, being at once an artist, politician, projector, merchant, and dramatist.

Beaumaris (bō-ma'ris), a seaport town, North Wales, Isle of Anglesey, on the Menai Strait. It is a favourite watering-place, and contains the remains of a castle built by Edward I. about 1295. Pop. 2202.

Beaumont (bō'mont), FRANCIS, and **Fletcher**, JOHN, two eminent English dramatic writers, contemporaries of Shakspeare, and the most famous of literary partners. The former, son of a common pleas judge, was born at Grace-Dieu, in Leicestershire, in 1584; died in 1616, and was buried in Westminster Abbey. At the age of sixteen he published a translation, in verse, of Ovid's fable of Salmacis and Hermaphroditus, and before nineteen became the friend of Ben Jonson. With Fletcher also he was early on terms of friendship. He married Ursula, daughter of Henry Isley of Sundridge, in Kent, by whom he left two daughters.—JOHN FLETCHER was born at Rye, Sussex, in 1579. His father was successively dean of Peterborough, bishop of Bristol, Worcester, and London. The *Woman Hater*, produced in 1606-7, is the earliest work known to exist in which he had a hand. It does not appear that he was ever married. He died in London of the plague, August, 1625, and was buried at St. Saviour's, Southwark. The friendship of Beaumont and Fletcher, like their literary partnership, was singularly close; they lived in the same house, and are said to have even had their clothes in common. The works that pass under their names consist of over fifty plays, a masque, and some minor poems. It is believed that all the minor poems except one were written by Beaumont. After the death of Beaumont Fletcher continued to write plays alone or with other dramatists. It is now difficult, if not indeed impossible, to determine with certainty the respective shares of the two poets in the plays passing under their names. According to the testimony of some of their contemporaries Beaumont possessed the deeper and more thoughtful genius, Fletcher the gayer and more idyllic. *Four Plays in One*, *Wit at Several Weapons*, *Thierry and Theodoret*, *Maid's Tragedy*, *Philaster*, *King and No King*, *Knight of the Burning Pestle*, *Cupid's Revenge*, *Little French*

Lawyer, *Scornful Lady*, *Coxcomb*, and *Laws of Candy* have been assigned to Beaumont and Fletcher conjointly. To Beaumont alone—*The Masque of the Inner Temple* and *Gray's Inn*. To Fletcher alone—*The Faithful Shepherdess*, *Woman-hater*, *Loyal Subject*, *Mad Lover*, *Valentinian*, *Double Marriage*, *Humorous Lieutenant*, *Island Princess*, *Pilgrims*, *Wild-geese Chase*, *Spanish Curate*, *Beggar's Bush*, *Rule a Wife and Have a Wife*, *Fair Maid of the Inn*, &c. To Fletcher and Rowley—*Queen of Corinth*, *Maid of the Mill*, and *Bloody Brother*. To Fletcher and Massinger—*False One*, and *Very Woman*. To Fletcher and Shirley—*Noble Gentleman*, *Night-walker*, and *Love's Pilgrimage*. To Fletcher and Shakspeare—*Two Noble Kinsmen*.

Beaumont, SIR GEORGE, born of an ancient family in Leicestershire in 1753, died 1827. He possessed considerable skill as a landscape-painter, but was noted more especially as a munificent patron of the arts. The establishment of the National Gallery was mainly owing to his exertions.

Beaumont, SIR JOHN, born 1582, died 1628, brother of Francis Beaumont the dramatist; published *Bosworth Field*, an historical poem. He also wrote a poem in eight books, never printed, called *The Crown of Thorns*.

Beaumont, JOSEPH, D.D., born 1615, died 1699; descended from an old Leicestershire family. In 1663 he became master of Peterhouse College, Cambridge. Wrote *Psyche*, or *Love's Mystery*, a poem once very popular, and an attack on Henry More's *Mystery of Godliness*, for which he received the thanks of the university.

Beaumont, WILLIAM, M.D., an American surgeon, born 1785, died 1853. His experiments on digestion with the Canadian St. Martin, who lived for years after receiving a gunshot wound in the stomach which left an aperture of about two inches in diameter, were of great importance to physiological science.

Beaune (bōn), a town, France, dep. Côte d'Or, 23 miles s.s.w. Dijon, well built, with handsome church, public library, museum, &c., and a trade in the fine Burgundy and other wines of the district.

Beaune (bōn), FLORIMOND, a distinguished mathematician and friend of Descartes, born at Blois 1601, died at the same place 1652. He may be regarded as the founder of the integral calculus.

Beauregard (bō'rè-gård), PETER GUSTAVUS TOUTANT, a general of the Confederate troops in the American civil war; born in 1818 near New Orleans. He studied at the military academy, West Point, and left it as artillery lieutenant in 1838. He served in the Mexican war, and on the outbreak of the civil war joined the Confederates. He commanded at the bombardment of Fort Sumter, gained the battle of Bull Run, lost that of Shiloh, assisted in the defence of Charleston, and aided Lee in that of Richmond. He died Feb. 20, 1893.

Beausobre (bō-sō-br), ISAAC, born in 1659 at Niort, in France, died at Berlin 1738. In 1683 he became Protestant minister of Châtillon-sur-Indre, but was compelled by persecution to go into exile in 1685. In 1694 he became minister to French Protestants at Berlin. He enjoyed much of the favour both of Frederick William I. and of the crown-prince, afterwards Frederick the Great, and died in 1738. His most remarkable work is the *Histoire Critique de Manichéisme* (1734).

Beauty, THE BEAUTIFUL. See *ÆSTHETICS*.

Beauvais (bō-vā; ancient *Bellovacum*), a town, France, capital of the department of Oise, at the confluence of the Avelon with the Thérain, 43 miles north of Paris, poorly built, but with some fine edifices, the choir of the uncompleted cathedral being one of the finest specimens of Gothic architecture in France. In 1472 Beauvais resisted an army of 80,000 Burgundians under Charles the Bold. On this occasion the women particularly distinguished themselves, and one of them, Jeanne Lainé, called La Hachette, seeing a soldier planting a standard on the wall, seized it and hurled him to the ground. The banner is preserved in the town-hall, and an annual procession of young girls commemorates the deed. Manufactures: tapestry and carpets, trimmings, woollen cloth, cottons, &c. Pop. 15,318.

Beaver, a rodent quadruped, about 2 feet in length exclusive of the tail, genus *Castor* (*C. fiber*), at one time common in the northern regions of both hemispheres, but now found in considerable numbers only in North America, living in colonies, but occurring solitary in Central Europe and Asia. It has short ears, a blunt nose, small fore-feet, large webbed hind-feet, with a flat ovate tail covered with scales on its upper surface. It is valued for its fur, which used to be largely employed in the manufacture of

hats, but for which silk is now for the most part substituted, and for an odoriferous secretion named castor, at one time in high repute, and still largely used in some parts of the world as an anti-spasmodic medicine.



Beaver (*Castor fiber*).

The food of the beaver consists of the bark of trees, leaves, roots, and berries. Their favourite haunts are rivers and lakes which are bordered by forests. In winter they live in houses, which are 3 to 4 feet high, are built on the water's edge, and being substantial structures with the entrance under water afford them protection from wolves and other wild animals. These dwellings are called beaver 'lodges,' and accommodate a single family. They also live in burrows. They can gnaw through large trees with their strong teeth, this being done partly to obtain food, partly to get materials for houses or dam-building. When they find a stream not sufficiently deep for their purpose they throw across it a dam constructed with great ingenuity of wood, stones, and mud. The beaver has been long extinct in Britain, but a colony has recently been introduced into the island of Bute.

Beaver, the movable face-guard of a helmet, so fitted on as to be raised and lowered at pleasure.

Beaver-rat (*Hydromys chrysogaster*), a Tasmanian rodent quadruped, inhabiting the banks both of salt and fresh waters. They are admirable swimmers and divers, and exceedingly shy.

Beaver Falls, Pa., near the junction of the Beaver River with the Ohio, 34 miles from Pittsburgh. Various factories are here. Pop. 1890, 9734.

Bebée'ru (*Nectandra Rodiei*), a tree of British Guiana, yielding green-heart timber.

Bec, a celebrated abbey of France, in Normandy, near Brionne, now represented only by some ruins. Lanfranc and Anselm were both connected with this abbey.

Beccafi'co, a European bird (*Sylvia hortensis*), the garden-warbler.

Beccafu'mi, DOMEN'ICO, Italian painter, born near Sienna in the latter half of the fifteenth century, enriched the churches of Sienna with many noble frescoes and other paintings. He drew and coloured well, and possessed strong inventive powers. He died at Sienna 1551, and was buried in its cathedral.

Beccaria (bek-ä-rē'ä), CESARE BONESANA, MARCHESE DI, Italian economist and writer on penal laws; born 1735 or 1738, died 1793. He is principally known from his treatise, *On Crimes and Punishments*, which was speedily translated into various languages, and to which many of the reforms in the penal codes of the principal European nations are traceable. He became professor of political economy at Milan, where he died.

Beccaria (bek-ä-rē'ä), GIOVANNI BATTISTA, an Italian natural philosopher, born 1716, died 1781; was appointed professor of experimental physics at Turin, 1748; author of a treatise on Natural and Artificial Electricity, *Letters on Electricity*, &c. He contributed several articles to the *Transactions of the Royal Society of London*, and was commissioned in 1759 to measure an arc of the meridian in the neighbourhood of Turin.

Beccles (bek'lz), a town of England in Suffolk, 33 miles N.N.E. from Ipswich, on the right bank of the Waveney; has a fine church of the fourteenth century, and a good trade coastwise. Pop. 1891, 6669.

Becerra (be-ther'ä), GASPAR, Spanish painter and sculptor, born 1520, died 1570. He studied under Michel Angelo at Rome, and is credited with the chief share in the establishment of the fine arts in Spain.

Beche (bāsh), SIR HENRY DE LA, an English geologist, born 1796, died 1855. He founded the geological survey of Great Britain, which was soon undertaken by the government, De la Beche being appointed director-general. He also founded the Jermyn Street Museum of Economic or Practical Geology, and the School of Mines. His principal works are: *Geology of Jamaica*, *Classification of European Rocks*, *Geological Manual*, *Researches in Theoretical Geology*, *Geology of Cornwall*, *Devon*, and *West Somerset*, &c.

Bêche-de-Mer (bāsh-dè-mār). See *Trepang*.

Becher (beh'er), JOHANN JOACHIM, Ger-

man chemist, born in 1635, died in London 1682. He became a professor at Mainz; was elected a member of the Imperial council at Vienna, 1660, but fell into disgrace and subsequently resided in various parts of Germany, Holland, Italy, Sweden, and Great Britain. His chief work, *Physica Subterranea*, containing many of the fanciful theories of the alchemists, was published in 1669, and enlarged in 1681.

Bechstein (beh'stīn), JOHANN MATTHÄUS, German naturalist, born in 1757, died in 1822. He wrote a popular natural history of Germany, and various works on forestry, in which subject his labours were highly valuable. In Britain he is best known by a treatise on cage birds.

Bechuanas, BETCHUANAS (bech-wan'az), a widely spread race of people inhabiting the central region of South Africa north of Cape Colony. They belong to the great Kaffre stem, and are divided into tribal sections. They live chiefly by husbandry and cattle rearing, and they work with some skill in iron, copper, ivory, and skins. They have been much harassed by Boers and others, and this led them to seek British protection. From 1878 to 1880 South Bechuanaland was partly administered by British officers; and in 1884 and 1885 great part of the rest of their territory was brought under British influence, the farthest northern portion of it, however, reaching to the Zambesi, being only a protectorate. The area is 180,000 sq. m., and pop. 478,000. Bechuanaland lies between the Transvaal on the east and the German Protectorate on the west. It is generally speaking flat or only slightly undulating, and is essentially a grass country, all the grasses being of a substantial and nutritious quality which stands well against drought. Surface water is scarce, but there is an extraordinary underground supply which no doubt will be turned to profitable account. Some parts are wooded and well watered. Gold, coal, and copper have been found.

Beck'er, WILHELM ADOLF, German archæologist, born at Dresden 1796, died at Meissen 1846. In 1828 he became a teacher at Meissen, in 1837 was appointed extraordinary professor of classical archæology at Leipsic, and in 1842 ordinary professor. Best known works: *Gallus, oder römische Scenen aus der Zeit Augusts*, and *Charikles, oder Bilder altgriechischer Sitte*, which reproduce in a wonderful manner the social life of old Rome and Greece.

Beck'et, THOMAS (the form *A Becket* is also common), archbishop of Canterbury, born in London 1117 or 1119, assassinated in Canterbury Cathedral, 29th Dec. 1170. He was educated at Oxford and Paris, and was sent, by the favour of Theobald, Archbishop of Canterbury, to study civil law at Bologna in Italy, and on his return made Archdeacon of Canterbury and Provost of Beverley. In 1158 Henry II. appointed him high-chancellor and preceptor to his son, Prince Henry—the first instance after the Conquest of a high office being filled by a native Englishman. At this period he was a complete courtier, conforming in every respect to the humour of the king. He was, in fact, the king's prime companion, held splendid levees, and courted popular applause. On the death of Theobald, 1162, he was consecrated archbishop, when he affected an extraordinary austerity of character, and appeared as a zealous champion of the church against the aggressions of the king, whose policy was to have the clergy in subordination to the civil power. Becket was forced to assent to the 'Constitutions of Clarendon,' but a series of bitter conflicts with the king followed, ending in Becket's flight to France, when he appealed to the pope, by whom he was supported. After much negotiation a sort of reconciliation took place in 1170, and Becket returned to England, resumed his office, and renewed his defiance of the royal authority. A rash hint from the king induced four barons, Reginald Fitz-Urse, William de Tracy, Hugh de Morville, and Richard Breto, to go to Canterbury and murder the archbishop while at vespers in the cathedral. He was canonized in 1172, and the splendid shrine erected at Canterbury for his remains was, for three centuries, a favourite place of pilgrimage.

Beckett, GILBERT ABBOT A'. See *A Beckett*.

Beck'ford, WILLIAM, an English writer famous in his time for his immense wealth and his eccentricities. He was born at Fonthill, his father's estate in Wiltshire, in 1759. In 1770 the death of his father left him in the possession of £1,000,000 of money, and an income of £100,000 a year. He travelled much, and for some time lived in Portugal. He expended an enormous sum in building and rebuilding Fonthill Abbey, near Salisbury, which he filled with rare and expensive works of art. Here he lived in seclusion for twenty years. In

1822 the abbey and greater part of its contents were sold, and he retired to Bath, where, with a much-diminished fortune, but one amply sufficient, he lived till 1844. His literary fame rests upon his eastern tale *Vathek*, which he wrote in French, and a translation of which into English (said to be by a clergyman) appeared at London without his knowledge in 1784. The tale is still much read, and was highly commended by Lord Byron. He had two daughters, one of whom became Duchess of Hamilton, and brought his valuable library to this family.—**William Beckford**, his father, a London merchant and West Indian proprietor, was famous for a spirited speech made to George III. when Lord Mayor of London.

Beckmann, JOHANN, German writer on the industrial arts and agriculture, born 1739, died 1811. He was for a short time professor of physics and natural history at St. Petersburg, and afterwards for almost forty-five years professor of philosophy and economy in Göttingen. His *History of Inventions* is well known in the English translation of it.

Beckx (beks), PIERRE JEAN, general of the order of Jesuits, born near Louvain, Belgium, 1795, died 1887. The success of the Jesuits, especially in non-Catholic countries, was greatly due to his tact and energy.

Becquerel (bek-rel), ANTOINE CÉSAR, French physicist, born 1788, died 1878. He served as an officer of engineers, and retired in 1815, after which he devoted himself to the study of electricity, especially electro-chemistry. He refuted the 'theory of contact' by which Volta explained the action of his pile or battery. Becquerel may be considered one of the creators of electro-chemistry.

Becse (bech'e), OLD, a town of Hungary, 48 miles s. of Szegedin, on the right bank of the Theiss. Pop. 15,000.—**NEW BECSE**, a market-town on the left bank of the Theiss, 5 miles E. of Old Becse. Pop. 7000, or, with the immediately adjoining village of Franyova, about 15,000. Both towns carry on an extensive trade in grain.

Becskerek (bech'ke-rek), a town of South Hungary, on the Bega, 45 miles s.w. from Temesvar, with which it communicates by the Bega Canal. Trade in cattle and agricultural produce. Pop. 20,000.

Bed, BEDSTEAD, an article of furniture to sleep or rest on. The term *bed* properly is applied to a large flat bag filled with fea-

thers, down, wool, or other soft material, and also to a mattress supported on spiral springs or form of elastic chains or wire-work which is raised from the ground on a bedstead. The term, however, sometimes includes the bedstead or frame for supporting the bed. The forms of beds are necessarily very various—every period and country having its own form of bed. Air-beds and water-beds (which see) are much used by invalids.

Bed, in geol., a layer or stratum, usually a stratum of considerable thickness.

Beda. See *Bede*.

Bédarioux (bā-där-i-eu), a thriving town, Southern France, dep. Hérault, situated on the Orb. Pop. 6923.

Bed-bug. See *Bug*.

Bed-chamber, LORDS OF THE, officers of the royal household of Britain under the groom of the stole. They are twelve in number, and wait a week each in turn. In the case of a queen regnant these posts are occupied by ladies, called *Ladies of the Bed-chamber*.

Beddoes (bed'ōz), THOMAS, physician and author, born 1760; educated at Oxford, London, and Edinburgh. After taking his doctor's degree and visiting Paris, he was appointed professor of chemistry at Oxford. There he published some excellent chemical treatises, and *Observations on the Calculus, Sea-scurvy, Consumption, Catarrh, and Fever*. His expressed sympathy with the French revolutionists led to his retirement from his professorship in 1792, soon after which he published his *Observations on the Nature of Demonstrative Evidence*, and the exceedingly popular *History of Isaac Jenkins*. In 1794 he married a sister of Maria Edgeworth; and in 1798, with the pecuniary aid of Wedgwood, opened a pneumatic institution for curing phthisical and other diseases by inhalation of gases. It speedily became an ordinary hospital, but was noteworthy as connected with the discovery of the properties of nitrous oxide, and as having been superintended by the young Humphry Davy. Beddoes' essays on *Consumption* (1779) and on *Fever* (1807), and his *Hygeia* (3 vols. 1807) had a high contemporary repute. He died in 1808.

Beddoes, THOMAS LOVELL, dramatist, born 1803; published the *Bride's Tragedy* while an undergraduate at Oxford, and led an eccentric life, dying in 1849. His work was largely fragmentary, but his posthumous *Death's Jest-book*, or the *Fool's Tragedy*

(1850), received the high praise of such judges as Landor and Browning. His *Poems*, with memoir, appeared in 1851.

Bede, BEDA, or BÆDA, known as the Venerable, Anglo-Saxon scholar, born in 672 or 673 in the neighbourhood of Monkwearmouth, county Durham; educated at St. Peter's monastery, Wearmouth; took deacon's orders in his nineteenth year at St. Paul's monastery, Jarrow, and was ordained priest at thirty by John of Beverley, bishop of Hexham. His life was spent in studious seclusion, the chief events in it being the production of homilies, hymns, lives of saints, commentaries, and works in history, chronology, grammar, &c. He was the most learned Englishman of his day, and in some sense the father of English history, his most important work being his *Historia Ecclesiastica Gentis Anglorum* (or *Ecclesiastical History of England*), afterwards translated by King Alfred into Anglo-Saxon. Besides his familiarity with Latin, he knew Greek and had some acquaintance with Hebrew. Most of his writings were on scriptural and ecclesiastical subjects, but he also wrote on chronology, physical science, grammar, &c., and had considerable ability in the writing of Latin verse. He died in 735, an interesting record of his closing days being preserved in a letter by his pupil Cuthbert. His body was after a lapse of time removed from Jarrow church to Durham, but of the shrine which formerly inclosed them only the Latin inscription remains, ending with the verse—*'Hac sunt in fossa Bedæ venerabilis ossa.'*

Bedeguar, or BEDEGAR (bed'e-gär), a spongy excrescence or gall, sometimes termed sweet-brier sponge, found on various species of roses, and produced by

several insects as receptacles for their eggs, especially by the *Cynips rosæ*. Once thought a diuretic and vermifuge.

Bedell, WILLIAM, a celebrated Irish bishop, born in Essex in 1570. In 1604 he went to Venice as chaplain to Sir Henry Wotton, and remained eight years. After



a a, Bedeguar on the Rose.

holding the living of Horingsheath from 1615–27 he became provost of Trinity College, Dublin, and in 1629 Bishop of Kilmore and Ardagh, though he resigned the latter of the united sees in 1630. He set himself to reform abuses and promote the spread of Protestantism, procured the translation of the Old Testament into Irish, and by his tact and wisdom conciliated the adherents of both creeds. He underwent a brief imprisonment on the breaking out of the rebellion in 1641, and died in the year following. His biography was written by Bishop Burnet.

Be'der Ware. See *Bidery*.

Bed'ford, a parl. and municip. borough, England, county town of Bedfordshire, on the Ouse. The chief buildings are the law courts, a range of public schools, a large infirmary, county jail, &c., and the churches. The town is rich in charities and educational institutions, the most prominent being the Bedford Charity, embracing grammar and other schools, and richly endowed. There is an extensive manufactory of agricultural implements; lace is also made, and there is a good trade. John Bunyan was born at Elstow, a village near the town, and it was at Bedford that he lived, preached, and was imprisoned. Bedford sends one member to Parliament. Pop. 28,023.—BEDFORDSHIRE, or BEDS, the county, is bounded by Northampton, Bucks, Herts, Cambridge, and Huntingdon; area, 294,983 acres, of which 260,000 are under tillage or in permanent pasture. Chalk hills, forming a portion of the Chilterns, cross it on the s.; N. of this is a belt of sand; the soil of the vale of Bedford, consisting mostly of clay and loam, is very fertile; and the meadows on the Ouse, Ivel, and other streams furnish rich pasturage. Two-thirds of the soil is under tillage. Besides the usual cereal and other crops, culinary vegetables are extensively cultivated for the London market. Principal manufactures: agricultural implements, and straw-plait for hats, which is made up principally at Dunstable and Luton. The county returns two members to the House of Commons. Pop. 1891, 160,729.

Bedford, JOHN, DUKE OF, one of the younger sons of Henry IV., king of England; famous as a statesman and a warrior. He defeated the French fleet in 1416, commanded an expedition to Scotland in 1417, and was lieutenant of England during the absence of Henry V. in France. On the king's death he became regent of France,

and for several years his policy was as successful as it was able and vigorous, the victory of Verneuil in 1424 attesting his generalship. The greatest stain on his memory is his execution of the Maid of Orleans (Joan of Arc) in 1431. He died in 1435 at Rouen, and was buried in the cathedral of that city.

Bedford Level, a large tract of marshy land in England, of about 400,000 acres total area, comprising 63,000 in Norfolk, 30,000 in Suffolk, 50,000 in Huntingdon, the Peterborough fen in Northampton, the Holland district in Lincolnshire, and most of the isle of Ely in Cambridge. It derives its name from Francis, earl of Bedford, who in the seventeenth century expended large sums of money in attempting to drain it. A great part of the Level is under cultivation, and produces grain, flax, and coleseed; the remainder yields a winter harvest of wild fowl for the London market.

Bed'lam, a corruption of Bethlehem (Hospital), the name of a religious house in London, converted, after the general suppression by Henry VIII., into a hospital for lunatics. The original Bedlam stood in Bishopsgate Street, its modern successor is in St. George's Fields. The lunatics were at one time treated as little better than wild beasts, and hence Bedlam came to be typical of any scene of wild confusion. The average number of patients is about 300.

Bedlis. See *Betlis*.

Bedmar', ALPHONSO DE LA CUEVA, Spanish cardinal, born in 1572, was sent in 1607 by Philip III. as ambassador to Venice, and rendered himself famous by an alleged conspiracy with the Milanese and Neapolitan governors to overthrow the republic of Venice and subject it to Spanish domination (1618). On its discovery Bedmar escaped, and was appointed governor of the Low Countries by the king and cardinal by the pope. Died 1655. The plot is the subject of Otway's *Venice Preserved*.

Bed of Justice. See *Lit de Justice*.

Bedouins (bed-ū-ēnz'; Arabic *Bedawi*, pl. *Beduân*, 'dwellers of the desert'), a Moham. medan people of Arab race inhabiting chiefly the deserts of Arabia, Syria, Egypt, and North Africa. They lead a nomadic existence in tents, huts, caverns, and ruins, associating in families under sheiks or in tribes under emirs. In respect of occupation they are only shepherds, herdsmen, and horse-breeders, varying the monotony of pastoral life by raiding on each other and

plundering unprotected travellers whom they consider trespassers. They are ignorant of writing and books, their knowledge being purely traditional and mainly genealogical. They are lax in morals, and unreliable even in respect of the code of honour attributed to them in poetry and fiction. In stature they are undersized, and, though active, they are not strong. The ordinary dress of the men is a long shirt girt at the loins, a black or red and yellow handkerchief for the head, and sandals; of the women, loose drawers, a long shirt, and a large dark-blue shawl covering the head and figure. The lance is the favourite weapon.

Bed-sores, a troublesome kind of sores liable to appear on patients long confined to bed, and either unable or not allowed to change their position, and occurring at the parts chiefly pressed by the weight of the body.

Bedstead. See *Bed*.

Bed'straw, the popular name of the different species of *Galium*, a genus of plants, order Rubiaceæ. The Yellow Bedstraw or Cheese-rennet (*G. verum*), the flowers and roots of which afford yellow and red dyes, is rare in New England. Goose-grass (*G. aparine*) is a well-known member of the genus, the juice of which has been used in *lepra* and other cutaneous diseases.

Bee, the common name given to a large family of hymenopterous or membranous-winged insects, of which the most important is the common hive or honey bee (*Apis mellifica*). It belongs to the warmer parts of the Eastern Hemisphere, but is now naturalized in the Western. A hive commonly consists of one mother or queen, from 600 to 800 males or drones, and from 15,000 to 20,000 working bees, formerly termed neuter, but now known to be imperfectly-developed females. The last-mentioned, the smallest, have twelve joints to their

antennæ, and six abdominal rings, and are provided with a sting; there is, on the outside of the hind-legs, a smooth hollow, edged with hairs, called the *basket*, in which the kneaded pollen or bee-bread, the food of the larvæ, is stored for transit. The queen has the same characteristics, but is of larger size, especially in the abdomen; she has also a sting. The males, or drones, differ from both the preceding by having thirteen joints to the antennæ; a rounded

head, with larger eyes, elongated and united at the summit; and no stings. According to Huber the working-bees are themselves divisible into two classes: one, the *cirières*, devoted to the collection of provisions, &c.; the other, smaller and more delicate, employed exclusively within the hive in rearing the young. The mouth of the bee is adapted for both masticatory and suctorial purposes, the honey

being conveyed thence to the anterior stomach or crop, communicating with a second stomach in which alone a digestive process can be traced. The queen, whose sole office is to propagate the species, has two large ovaries, consisting of a great number of small cavities, each containing sixteen or seventeen eggs. The inferior half-circles, except the first and last, on the abdomen of working-bees, have each on their inner surface two cavities, where the wax, secreted by the bee from its saccharine food, is formed in layers, and comes out from between the abdominal rings. Respiration takes place by means of air-tubes which branch out to all parts of the body, the bee being exceedingly sensitive to an impure atmosphere. Of the organs of sense the most important are the antennæ, deprivation of these resulting in a species of derangement. The majority of entomologists regard their function as in the first place auditory, but they are exceedingly



Bedouin Arabs.

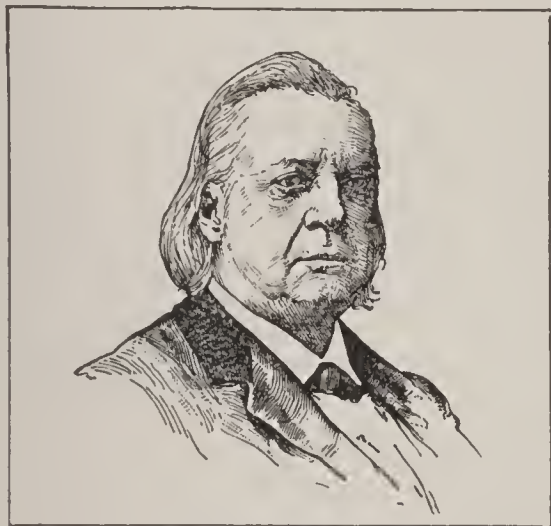
sensitive to tactual impressions, and are apparently the principal means of mutual communication. Bees undergo perfect metamorphosis, the young appearing first as larvæ, then changing to pupæ, from which the imago or perfect insect springs. Whether the offspring are to be female, or male is said to be dependent upon the contact or absence of contact of the egg with the impregnating fluid received from the male and stored in a special sac communicating with the oviduct, unfertilized eggs producing males. The further question whether the offspring shall be queens or workers is resolved by the influence of environment upon function. The enlargement of a cell to the size of a royal chamber and the nourishment of its inmate with a special kind of food appear to be sufficient to transform an ordinary working-bee larva into a fully-developed female or queen-bee. The season of fecundation occurs about the beginning of summer, and the laying begins immediately afterwards, and continues until autumn; in the spring as many as 12,000 eggs may be laid in twenty-four days. Those laid at the commencement of fine weather all belong to the working sort, and hatch at the end of four days. The larvæ acquire their perfect state in about twelve days, and the cells are then immediately fitted up for the reception of new eggs. The eggs for producing males are laid two months later, and those for the females immediately afterwards. This succession of generations forms so many distinct communities, which, when increased beyond a certain degree, leave the parent hive to found a new colony elsewhere. Thus three or four swarms sometimes leave a hive in a season. A good swarm is said to weigh at least 6 or 8 pounds. Besides the common bee (*A. mellifica*) there are the *A. fasciata*, domesticated in Egypt, the *A. ligustica*, or Ligurian bee of Italy and Greece, introduced into England, &c. See *Apiary*.

The humble-bees, or bumble-bees, of which about forty species are found in Britain and over sixty in N. America, belong to the genus *Bombus*, which is almost world-wide in its distribution. Of these species solitary females which have survived the winter commence constructing small nests when the weather begins to be warm enough; some of them going deep into the earth in dry banks, others preferring heaps of stone or gravel, and others choosing always some bed of dry moss. In the nest the bee collects a

mass of pollen and in this lays some eggs. The cells in these nests are not the work of the old bee, but are formed by the young insects similarly to the cocoons of silk-worms; and when the perfect insect is released from them by the old bee, which gnaws off their tops, they are employed as honey-cups. The humble-bees, however, do not store honey for the winter, those which survive till the cold weather leaving the nest and penetrating the earth, or taking up some other sheltered position, and remaining there till the spring. The first brood consists of workers, and successive broods are produced during the summer. The experiment of domesticating different kinds of wild bees has been tried with no satisfactory results. Some bees, from their manner of nesting, are known as 'mason bees,' 'carpenter bees,' and 'upholsterer bees.' Some of these bees (genus *Osmia*) cement particles of sand or gravel together with a viscid substance in forming their nests; others make burrows in wood. The leaf-cutter or upholsterer bee (genus *Megachile*) lines its burrow with bits of leaf cut out in regular shapes.

Beech (*Fagus*), the common name of trees of the nat. order Cupuliferæ, well known in various parts of the world, including New Zealand and Terra del Fuego. The *Fagus sylvatica*, a common European forest-tree, sometimes reaches a height of 120 feet, with a diameter of 4 or more, is known by its waved and somewhat oval leaves, its triangular fruit inclosed by pairs in a prickly husk, and by its smooth and silvery bark. The wood is hard and brittle, and if exposed to the air liable soon to decay. It is, however, peculiarly useful to cabinet-makers and turners, carpenters' planes, furniture, sabots, &c., being made of it; and it is durable under water for piles and mill-sluices. The fruit or *beechnut*, when dried and powdered, may be made into a wholesome bread; it has also occasionally been roasted and used as a substitute for coffee, and yields a sweet and palatable oil used by the lower classes of Silesia instead of butter. Beechnut is, however, chiefly used as food for swine, poultry, and other animals. The leaves of the beech-tree collected in the autumn, before they have been injured by the frosts, are in some places used to stuff mattresses. The North American white beech is identical with the European species. Red-leaved varieties are now common, the American *E. ferruginæa* being of this colour.

Beecher (bē'chēr), HENRY WARD, an eminent American preacher, son of Lyman Beecher (a distinguished clergyman, born 1775, died 1863), born in Connecticut 1813; was minister at Lawrenceburg, Ind., 1837,



Henry Ward Beecher.

and of Plymouth Congregational Church, Brooklyn, New York, in 1847. The latter pulpit he continued to occupy till his death in 1887, though in 1882 he ceased his formal connection with the Congregationalists on the ground of disbelief in eternal punishment. From 1861 to 1863 he was editor of the *Independent*, and for about ten years after 1870, of the *Christian Union*. He was also the author of a considerable number of works, of which his *Lectures to Young Men* (1850), *Life Thoughts* (1858), *Lectures on Preaching* (1872-74), and the weekly issues of his sermons, commanded wide circulation. Few contemporary preachers appealed to as large and diverse a public. His brothers Charles, Edward, and Thomas, have all distinguished themselves as Congregational clergymen. His sister Catherine Esther (born 1800, died 1878) did much for the education of women, and wrote on this subject and on domestic economy and kindred subjects.

Beecher-Stowe. See *Stowe*.

Beechey (bē'chi), ADMIRAL FREDERICK WILLIAM, son of Sir William Beechey the painter, born in 1796. In 1818 he accompanied Franklin in an expedition to discover the north-west passage, and the following year took part in a similar enterprise with Parry. In 1821 he was commissioned, with his brother H. W. Beechey, to examine by land the coasts of North Africa from Tripoli eastward, an account of which appeared in 1828. From 1825 to 1828 he was

commander of the *Blossom* in another Arctic expedition, by way of the Pacific and Behring's Strait, of which a narrative was published in 1831. In 1854 he was made rear-admiral of the blue; he died in 1856.

Beechey, SIR WILLIAM, a fashionable portrait-painter, born 1753, died 1839. In 1772 elected Royal Academician, and knighted in acknowledgment of his large picture of a cavalry review, including portraits of George III., the Prince of Wales, &c. The complete catalogue of his works includes portraits of nearly all the leading personages of his day, but artistically he does not belong to the first rank of portrait-painters.

Bee-eaters, a family of Fissirostral Passerine birds, distributed over Africa, India, the Moluccas, and Australia, chiefly known in Europe by the *Merops Apiaster*, or common bee-eater, a summer visitant to Russia and the Mediterranean borders. It is rare in Britain. For the most part they nest in colonies, depositing their eggs like the sand martins, at the end of a tunnel sometimes 8 or 9 feet long. They are frequently killed for their plumage, which is brownish-red and yellow above, pale-blue on the forehead, yellow at the breast, and green at the wings, tail, and under parts.

Beef-eaters (usually but erroneously considered a corruption of *Fr. buffetiers*), yeomen of the guard of the sovereign of Great Britain, stationed by the sideboard at great royal dinners, and dressed after the fashion of the time of Henry VII.—Also a name for certain African insessorial birds (genus *Buphaga*) which feed on the larvæ embedded in the hides of buffaloes or other large animals.

Beef-tea, a nourishing beverage for invalids, which may be prepared from lean beef by chopping it small, putting it with some cold water into a sauce-pan and letting it simmer for two or three hours (or more), also skimming off the fat. It is easy of digestion, and very nutritious.

Beef-wood, the timber of some species of Australian trees belonging to the genus *Ca suarina*, of a reddish colour, hard, and close-grained, with dark and whitish streaks, chiefly used in fine ornamental work.

Bee-hawk, a name given to the honey-buzzard (*Pernis apivorus*), which preys on hymenopterous insects.

Bee-hawk Moth, the name of two British species of moths (*Macroglossa bombyliiformis* and *M. fuciformis*) having translucent wings and hairy bodies.

Beehive-houses, the archæological name of primitive dwellings of unknown antiquity found in Scotland and Ireland. They are conical in shape with a hole at the apex. Some of them are ascribed to the stone age by Lubbock and others, but they are more generally assigned to the period from the seventh to the twelfth century.

Beejapoor. See *Bejapoor*.

Beelzebub (bē-el'zē-bub; Hebrew, 'the god of flies'), the supreme God of the Syro-Phœnician peoples, in whose honour the Philistines had a temple at Ekron. With his name may be compared the epithet 'avërter of flies' applied to Zeus and later to Hercules. The use of *Beelzebub* in the New Testament has been the subject of much discussion, some asserting it to be an opprobrious form of Beelzebub, meaning the 'lord of dung,' others translating it 'lord of the dwelling,' and others again finding in the change from *b* to *l* only a natural linguistic modification.

Beer. See *Ale* and *Brewing*.

Beerbhoom. See *Birbhum*.

Beershe'ba (now *Bir-es-Seba*, 'the well of the oath'), the place where Abraham made a covenant with Abimelech, and in common speech representative of the southernmost limit of Palestine, near which it is situated. It is now a mere heap of ruins near two large and five smaller wells, though it was a place of some importance down to the period of the Crusades.

Bees'-wax, a solid fatty substance secreted by bees, and containing in its purified state three chemical principles—myricin, cerin, and cerolein. It is not collected from plants, but elaborated from saccharine food in the body of the bee. (See *Bee*.) It is used for the manufacture of candles, for modelling, and in many minor processes. See *Wax*.

Beet (*Beta*), a genus of plants, nat. order Chenopodiaceæ, distinguished by its fruit being inclosed in a tough woody or spongy five-lobed enlarged calyx. Two species only are known in general cultivation, namely, the sea-beet (*B. maritima*) and the garden

beet (*B. vulgaris*). The former is a tough-rooted perennial, common on many parts of the British coast and sometimes cultivated for its leaves, which are an excellent substitute for spinach. Of the garden beet, which differs from the last in being of only biennial duration and in forming a tender fleshy root, two principal forms are known to cultivators, the chard beet and the common beet. In the chard beet the roots are small, white, and rather tough, and the leaves are furnished with a broad, fleshy midrib (*chard*), employed as a vegetable by the French, who dress the ribs like sea-kale under the name of *poi rée*. Some writers

regard this as a peculiar species, and call it *Beta cicla* or *hortensis*. The common beet includes all the fleshy-rooted varieties, such as red beet (with a fleshy large carrot-shaped root), yellow beet, sugar-beet, mangel-wurzel, &c. For garden purposes the best is the red



Beehive-houses at Cahernamacturech, co. Kerry.

beet of Castelnaudary, so called from a town in the s.w. of France. The beet requires a rich light soil, and being a native of the Mediterranean region is impatient of severe cold, requiring to be taken up in the beginning of winter and packed in dry sand, or in pits like potatoes, the succulent leaves having been first removed. Red beet is principally used at table, but if eaten in great quantity is said to be injurious. The beet may be taken out of the ground for use about the end of August, but it does not attain its full size and perfection till the month of October. A good beer may be brewed from the beet, and it yields a spirit of good quality. From the white beet the French, during the wars with Napoleon I., succeeded in preparing sugar, that article, as British colonial produce, having been prohibited in France. Since that time, with the increase of chemical and technical knowledge, the making of beet-sugar has become an important industry in France, Germany, Austria, Russia, Belgium, and Holland. It has even been tried in England, and the failure of attempts to produce beet-sugar on a large scale there seems to have been mainly

due to artificial conditions of trade competition.

Beet-beetle (*Silpha opāca*, and *S. atrāta*), the name of two beetles the larva of which, a little black maggot, injures beet and mangel-wurzel by feeding on the leaves.

Beet-fly (*Anthomyia Beta*), a fly resembling the common fly but of smaller size, which deposits its eggs in the leaves of mangel-wurzels and other beets. The larvæ, feeding on the tissues, raise bullæ or blisters, which, when numerous, injure the plant.

Beethoven (bā'tō-vn), LUDWIG VAN, a great German musical composer, born at Bonn, 16th Dec. 1770, studied under his father (a tenor singer), Pfeiffer, Van der Eden, and Neefe; began to publish in



Ludwig van Beethoven.

1783; became assistant court organist in 1785; and was sent by the Elector of Cologne to Vienna in 1792, where he was the pupil of Haydn and Albrechtsberger, and acquired a high reputation for piano-forte extemporization before the merit of his written compositions was fully understood. In or near Vienna almost all his subsequent life was spent, his artistic tour in North Germany in 1796 being the most important break. He died March 27, 1827. His later life was rendered somewhat morbid by his deafness, of which the first signs appeared in 1797. He had the head of Jove on the body of Bacchus, and there was in him a strong dash of what in a lesser man would be termed insanity, with an alternation between the highest elevation of genius and the conduct of a fool or buffoon. His best works were published after 1800, two periods being observable: the first from 1800

to 1814, comprising Symphonies 2-8; the opera *Fidelio* (originally *Leonore*), the music to Goethe's *Egmont*, and the overtures to *Prometheus*, *Coriolanus*, *King Stephen* and *Fidelio*; the second (in which the poetic school of musicians find the germs of the subsequent development through Schumann, Wagner, and Liszt) comprising the 9th Symphony, the *Missa Solemnis*, and the *Sonatas* Op. 101, 102, 106, 109, 110, and 111.

Beetle, a name often used as synonymous with the term *Coleoptera*, but restricted by others to include all those insects that have their wings protected by hard cases or sheaths, called *elytra*. Beetles vary in size from a mere point to the bulk of a man's fist, the largest, the elephant beetle of S. America, being 4 inches long. The so-called 'black beetles' of kitchens and cellars are not properly beetles at all, but cockroaches, and of the order *Orthoptera*.

Beetle-stone, a nodule of coprolitic iron-stone, so named from the resemblance of the inclosed coprolite to the body and limb of a beetle.

Beet-root. See *Beet*.

Befa'na (Ital., corrupted from *Epiphania*, 'Epiphany'), in Italy, a legendary housewife who, being too busy to see the wise men of the East on their way to the infant Christ, has been looking out for them ever since, being ignorant that they returned home another way. She is particularly concerned with children, and on Twelfth-night stockings are hung out to receive her gifts. The name is also given to a ragged doll which appears in the streets and shops on the eve and day of Epiphany.

Beffroi, a wooden tower on wheels formerly used in sieges.

Beg, or **BEY** ('prince' or 'lord'), in Turkey, a governor; or more particularly the governor of a sanjak. Sometimes given loosely to superior officers and persons of rank. It ranks between *effendi* and *pasha*.

Bega, CORNELIS, a Dutch painter and engraver, born at Harlem in 1620, one of the ablest pupils of Adrian von Ostade. His best paintings are in the Berlin Museum, and the Pinakothek at Munich. He died of the plague in 1664.

Begas, KARL, German historical and portrait painter, born 1794, died 1854. He at first followed the German pre-Raphaelites in style, but afterwards treated history and genre in the Düsseldorf romantic school. He was long court painter and professor at Berlin Academy, and painted the portraits

many eminent personages. In biblical subjects he was highly successful, as in the *Exposing of Moses*, *Christ prophesying the Fall of Jerusalem*, &c.

Begass. See *Bagasse*.

Beggar-my-neighbour, a game at cards usually played by two persons, who share the pack, and, laying their shares face downwards, turn up a card alternately until an honour appears. The honour has to be paid for by the less fortunate player at the rate of four cards for an ace, three for a king, two for a queen, and one for a knave; but if in the course of payment another honour should be turned up the late creditor becomes himself a debtor to the amount of its value.

Beggars. See *Vagrants*.

Beghards (beg'árdz), or **BEGUARDS**, members of a religious body which arose in Flanders in the thirteenth century. They disclaimed the authority of princes, and refused to submit unconditionally to the rules of any order, but bound themselves to a life of extreme sanctity without necessarily quitting their secular vocations. They were persecuted in the latter half of the fourteenth century as heretics, and either dispersed or distributed over the Dominican and Franciscan orders.

Begharmi (be-gár'mi). See *Bagirmi*.

Beg'lerbeg ('prince of princes'), the title among the Turks of a governor who has under him several begs, agas, &c.

Bego'nia, an extensive genus of succulent-stemmed herbaceous plants, order *Begoniaceæ*, with fleshy oblique leaves of various colours, and showy unisexual flowers, the whole perianth coloured. They readily hybridize, and many fine varieties have been raised from the tuberous-rooted kinds. From the shape of their leaves they have been called *elephant's ear*. Almost all the plants of the order are tropical, and they have mostly pink or red flowers.

Beguards. See *Beghards*.

Beguines (be-gēnz'), an order of females, who, without taking the monastic vows, formed societies for devotion and charity, living in houses called *beguinages*. The order originated, towards the end of the eleventh century, in Germany and the Netherlands, and was very flourishing in the twelfth and thirteenth centuries. They still exist in Holland, Belgium, and Germany, though the modern beguinage is an eleemosynary institution for lodging unmarried women rather than of the old type.

Be'gum, in the East Indies, a princess or lady of high rank.

Behaim', or **BEHEM, MARTIN**, a mathematician and astronomer, born at Nürnberg about 1430. He went from Antwerp to Lisbon with a high reputation in 1480, sailed in the fleet of Diego Cam on a voyage of discovery (1484-86), and explored the islands on the coast of Africa as far as the Congo. He colonized the island of Fayal, where he remained for several years, and assisted in the discovery of the other Azores; was afterwards knighted, and returned to his native country, where, in 1492, he constructed a terrestrial globe, still preserved. He died in Lisbon 1506.

Beham, the name of two engravers and painters.—1. **BARTHEL**, pupil of Dürer, born at Nürnberg 1498, died at Rome 1540. A picture by him in the Pinakothek at Munich ranks among the master-pieces of the old German school.—2. **HANS SEBALD**, born at Nürnberg in 1500; brother of Barthel. He was one of Dürer's ablest pupils, but his subjects were often gross. His later career was that of a tavern and brothel keeper, and he died or was put to death about 1550.

Behar', a prov. of Hindustan, in Bengal, area 44,139 sq. miles. It is generally flat, and is divided into almost equal parts by the Ganges, the chief tributaries of which in the prov. are the Gogra, Gandak, Kusi, Mahananda, and Soane. There is an extensive canal and irrigation system. Opium and indigo are largely produced. It is the most densely peopled prov. of India; pop. 23,127,104. Patna is the capital.—The town of Behar, in the Patna district, contains some ancient mosques and the ruins of an old fort; it is a place of large trade. Pop. 48,968.

Beheading. See *Capital Punishment*.

Behe'moth, the animal described in Job xl. The description is most applicable to the hippopotamus, and the word seems to be of Egyptian origin and to signify 'water-ox'; but it has been variously asserted to be the ox, the elephant, the crocodile, &c.

Be'hen, OIL OF. Same as *Oil of Ben*.

Behis'tun, or **BIS'UTUN**, a mountain near a village of the same name in Persian Kurdistan, celebrated for the sculptures and cuneiform inscriptions cut upon one of its sides—a rock rising almost perpendicularly to the height of 1700 feet. These works, which stand about 300 feet from the ground, were executed by the orders of Darius I.,

king of Persia, and set forth his genealogy and victories. To receive the inscriptions the rock was carefully polished and coated with a hard siliceous varnish. Their probable date is about 515 B.C. They were first copied and deciphered by Rawlinson.

Behn (ben), **APHRA**, English writer of plays and novels, born 1640; maiden name Johnson. As a child she went out to Surinam, where she became acquainted with the slave Oroonoko, whom she made the subject of a novel. On her return to England she married Mr. Behn, a London merchant of Dutch extraction, but was probably a widow when sent by Charles II. to serve as a spy at Antwerp during the Dutch war. She afterwards became fashionable among the men of wit and pleasure of the time as a prolific writer of plays, poems, and stories, now more notorious for their indecency than their ability. She died in 1689, and was buried in Westminster Abbey.

Behring, or **BERING** (bā'ring), **VITUS**, a famous navigator, born in 1680 at Horsens, Jutland. The courage displayed by him as captain in the navy of Peter the Great during the Swedish wars led to his being chosen to command a voyage of discovery in the Sea of Kamtchatka. In 1728 and subsequently he examined the coasts of Kamtchatka, Okhotsk, and the north of Siberia, ascertaining the relation between the north-eastern Asiatic and north-western American coasts. Returning from America in 1741, he was wrecked upon the desert island of Awatska (Behring's Island), and died there.

Behring's Strait, Sea, and Island.—The STRAIT is the channel separating the continents of Asia and America, and connecting the North Pacific with the Arctic Ocean; breadth at the narrowest part, between Cape Prince of Wales and East Cape, about 36 miles; depth in the middle from 29 to 30 fathoms. It is frozen in winter, and seldom free from fog or haze. Though named after Vitus Behring, it was only fully explored by Cook in 1778.—**BEHRING'S SEA**, sometimes called the Sea of Kamtchatka, is that portion of the North Pacific Ocean lying between the Aleutian Islands and Behring's Strait.—**BEHRING'S ISLAND**, the most westerly of the Aleutian chain, off the east coast of Kamtchatka. It is uninhabited, and is without wood. A contention between the United States and Great Britain as to the capture of seals in Behring's Sea was, in 1892, referred by treaty to a court of arbitration, con-

sisting of seven persons, two representing the United States, two representing Great Britain (one to be a Canadian), and one each from France, Sweden and Italy. The decision, as rendered August 15, 1893, was technically in favour of Great Britain in opposition to the claims of the U. States as to jurisdiction over the waters of Behring Sea. Liberal regulations, binding on both nations, were made, for protection of seals.

Beira (bā'i-rā), a province of Portugal, between Spain and the Atlantic, and bounded by the Douro on the N. and by the Tagus and Estremadura on the S. Area, 9244 square miles. Pop. 1,377,432. Chief town, Coimbra. It is mountainous.

Beit-el-Fakih (bāt-el-fā'kē), a town, Arabia, Yemen, a principal market for Mocha coffee. Pop. 8000.

Beja (bā'zha), a town, Portugal, province of Algarve, with an old cathedral and some Roman remains. Pop. 8500.

Bejapoor', a ruined city of Hindustan, in the Bombay presidency, near the borders of the Nizam's Dominions, on an affluent of the Krishna. It was one of the largest cities in India until its capture by Aurungzebe in 1686. The ruins, of which some are in the richest style of oriental art, are chiefly Mohammedan, the principal being Mahomet Shah's tomb, with a dome visible for 14 miles, and a Hindu temple in the earliest Brahmanical style. Pop. 13,245.

Bejar (bā-här'), a fortified town of Spain, prov. Salamanca, with woollen manufactures. Pop. 11,000.

Beke (bēk), **CHARLES TILSTONE**, English traveller, born 1800. He studied law at Lincoln's Inn, and having devoted much attention to ancient history and kindred subjects he published in 1834 *Origines Biblicæ*, researches in primitive history. Supported by private individuals, he joined Major Harris in the exploration of Abyssinia, of which he published an account in 1846. Two works on the Nile followed in 1847 and 1849, with a *Memoir in defence of Pères Paez and Lobo*, issued in Paris 1848. He also made journeys to Harran in 1861, to Abyssinia in 1865, and to the head of the Red Sea in 1874, in which year he died.

Bekes (bā'kāsh), a town, Hungary, at the junction of the Black and White Körös, with a trade in flax, cattle, corn, wine, &c. Pop. 32,616.

Bekker, **IMMANUEL**, German classical scholar, born 1785, died 1871. His critical editions of the texts of the most

important Greek and Latin authors, based on an examination and comparison of MSS., are very valuable, embracing Plato, Aristotle, Aristophanes, Thucydides, Livy, and Tacitus. He also published contributions to the philology of the Romance tongues.

Bel, the chief deity of the ancient Babylonians. See *Babylon*.

Bel, also **BELGAR**, the Hindu name of the *Ægle marmelos*, or Bengal quince. The fruit, which is not unlike an orange, is slightly aperient; a perfume and yellow dye are obtained from the rind, and a cement from the mucus of the seed.

Bela, the name of four kings of Hungary belonging to the Arpad dynasty.—**BELA I.**, son of Ladislaf, competed for the crown with his brother Andrew, whom he defeated, killed, and succeeded in 1061. He died 1063, after introducing many reforms.—**BELA II.**, the Blind, mounted the throne in 1131, and after ruling under the evil guidance of his queen, Helena, died from the effects of his vices in 1141.—**BELA III.**, crowned 1174, corrected abuses, repelled the Bohemians, Poles, Austrians, and Venetians, and died in 1196.—**BELA IV.**, succeeded his father Andrew II. in 1235; was shortly after defeated by the Tartars and detained prisoner for some time in Austria, where he had sought refuge. In 1244 he regained his throne, with the aid of the knights of Rhodes, and defeated the Austrians, but was in turn beaten by the Bohemians. Died 1270.

Bel and the Dragon, a book of the Apocrypha, forming a sort of addition to the book of Daniel. In it Daniel is shown as exposing the imposture of the priests of Bel and killing a sacred dragon.

Belbeis (bel'bās), a town, Lower Egypt, 28 miles N.N.E. of Cairo, on the road to Syria. Near it are traces of the ancient canal that joined the Nile to the Red Sea. Pop. 5000.

Belem (bā-len'), a town of Portugal, on

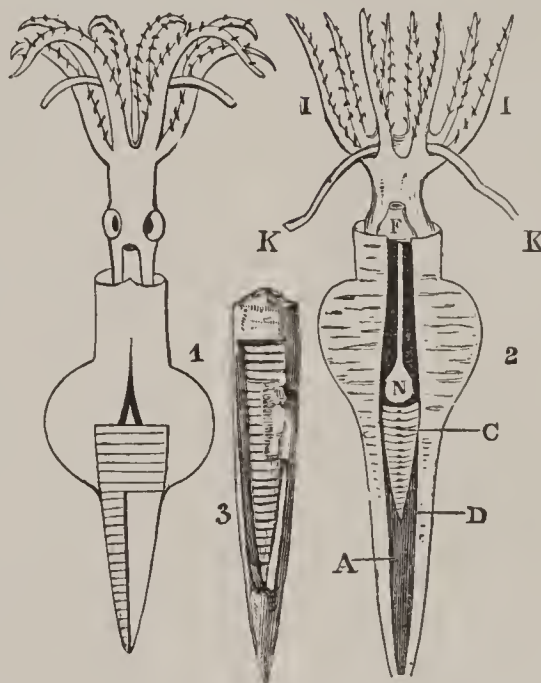
the right bank of the Tagus, now the fashionable suburb of Lisbon.

Bel'emnite, a name for straight, solid, tapering, dart-shaped fossils, popularly known as arrow-heads, thunderbolts, finger-stones, &c.

Bel'fast, a seaport in Maine, U. S.; the seat of Waldo county, on Penobscot Bay. Shipbuilding, etc., etc. Pop. 1890, 5294.

Belfast', a seaport and municipal and parliamentary borough of Ireland (in 1888 declared a city), principal town of Ulster, and county town of Antrim, built on low alluvial land on the left bank of the Lagan, at the head of Belfast Lough. Ballymacarret, in county Down, on the right bank of the Lagan, is a suburb. The streets are spacious and regular, the houses mostly of brick. The chief Episcopal churches are St. Ann's, Trinity, and St. George's, but the most magnificent is the Roman Catholic St. Peter's. The chief educational institutions are the Queen's College, with about twenty professors; and the theological colleges of the Presby-

terians and Methodists. Chief public buildings: the town-hall; the county court-house; the Commercial Buildings and Exchange; the White and Brown Linen Halls; the range of buildings for the customs, inland revenue, and post-office; the county jail; the Ulster Hall; the Albert memorial clock-tower, 143 feet high; the theatre; &c. In the suburbs are two extensive public parks, a botanic garden of 17 acres, and the borough cemetery. Belfast Lough is about 12 miles long, and 6 miles broad at the entrance, gradually narrowing as it approaches the town. The harbour and dock accommodation is now extensive, new docks having been recently added. Belfast is the centre of the Irish linen trade, and has the majority of spinning-mills and power-loom factories in Ireland. Previous to about 1830 the cotton manufacture was the leading industry of Belfast, but nearly all the mills have been con-



Belemnites.

1. Belemnoteuthis antiquus—ventral side.
2. Belemnites Owenii (restored). A, Guard. C, Phragmacone. D, Muscular tissue of mantle. F, Infundibulum. I, Uncinated arms. K, Tentacula. N, Ink-bag.
3. Belemnite.—British Museum.

verted to flax-spinning. The iron ship-building trade is also of importance, and there are breweries, distilleries, flour-mills, oil-mills, foundries, print-works, tan-yards, chemical works, ropeworks, &c. The commerce is large. An extensive direct trade is carried on with British North America, the Mediterranean, France, Belgium, Holland, and the Baltic, besides the regular traffic with the principal ports of the British islands. Belfast is comparatively a modern town, its prosperity dating from the introduction of the cotton trade in 1777. It has suffered severely at various times from faction-fights between Catholics and Protestants, the more serious having been in the years 1864, 1872, and 1886. It returns four members to the Imperial Parliament. Pop. in 1891, 255,896; of parliamentary borough, 273,055.

Belfort, or **BÉFORT** (bā-fōr), a small fortified town and territory of France, in the former dep. Haut Rhin, on the Savoureuse, well built, with an ancient castle and a fine parish church. In the Franco-German war it capitulated to the Germans only after an investment of more than three months' duration (1870-71). It has since been greatly strengthened. Belfort, with the district immediately surrounding it, is the only part of the department of Haut Rhin which remained to France on the cession of Alsace to Germany. Pop. of territory, 1891, 83,670.

Bel'fry, a bell-tower or bell-turret. A bell-tower may be attached to another building, or may stand apart; a bell-turret usually rises above the roof of a building, and is often placed above the top of the western gable of a church. The part of a tower containing a bell or bells is also called a belfry.

Bel'gæ, a collection of German and Celtic tribes who anciently inhabited the country extending between the Marne and Seine and the lower Rhine, and bounded north-west by the sea. Cæsar, on his invasion of Britain, found them established also in Kent and Sussex.

Bel'gard, a town of Prussia, prov. Pomerania, 15 miles south of the Baltic, with an old castle. Pop. 7868.

Belgaum (bel-gā'um), a town and fortress in Hindustan, Bombay Presidency, district of Belgaum, on a plain 2500 feet above the sea-level. In 1818 the fort and town were taken by the British, and from its healthy situation selected as a permanent military station. Pop. of town (including

7921 for the cantonment), 32,697. The area of the district is 4657 sq. miles, with a pop. of 864,014.

Bel'gica, a part of ancient Gaul, originally the land of the Bellovāci and Atrebātes, who lived in the neighbourhood of Amiens, and perhaps of Senlis

Belgiojoso (bel-jo-yō'so), a town, Italy, province of Pavia, with an old castle, in which Francis I. was lodged after the battle of Pavia in 1525. Pop. about 4000.

Belgiojoso, **CRISTINA**, **PRINCESS OF**, an Italian lady who took a distinguished part in the revolutionary movement of 1830, and again in 1848, when she raised a volunteer corps at her own expense. After an exile of some years she returned under the amnesty of 1856, regained her property, and supported the policy of Cavour. Died 1871, aged sixty-three.

Belgium (bel'jun; French, *Belgique*; German, *Belgien*), a European kingdom, bounded by Holland, the North Sea or German Ocean, France, and Germany; greatest length, 165 miles; greatest breadth, 120 miles; area, 11,366 square miles. For administrative purposes it is divided into nine provinces—Antwerp, Brabant, East Flanders, West Flanders, Hainaut, Liége, Limburg, Luxemburg, and Namur; total pop. on 31st Dec. 1891, 6,136,444. Brabant, the metropolitan province, occupies the centre. The capital is Brussels; other chief towns are Antwerp, Ghent, and Liége. The country may be regarded roughly as an inclined plain, falling away in height from the southern district of the Ardennes until in the N. and W. it becomes only a few feet above sea-level. The surface rocks in the south consist of slate, old red sandstone, and mountain limestone; towards the N.W. a coal and iron field stretches across the provinces of Hainaut and Liége, skirting those of Namur and Luxemburg. North and west of this coal-field a more recent formation is found, covered inland by deep beds of clay and on the coast by sand-dunes. The chief rivers are the Scheldt or Schelde and Meuse or Maas, which cross the country in a north-easterly direction; other navigable streams are the Dender, Dyle, Lys, Ourthe, Rupel, and Sambre. There are also a number of canals. The climate bears a considerable resemblance to that of the same latitudes in England; healthiest in Luxemburg and Namur, unhealthiest in the fens of Flanders and Antwerp. About one-sixth of the whole surface of the kingdom is occupied

BELGIUM.

by wood, Luxemburg and Namur being very densely wooded. These woods, the remains of the ancient forest of Ardennes, consist of hard wood, principally oak, and furnish valuable timber, besides many tons of bark both for the home-tanneries and for exportation, and large quantities of charcoal. South Brabant also possesses several fine forests, among others that of Soignies; but in the other provinces the timber—mostly varieties of poplar—is grown in small copses and hedgerows.

About four-fifths of the whole kingdom is under cultivation, and nearly eleven-twelfths of it profitably occupied, leaving only about one-twelfth waste. In the high lands traversed by the Ardennes the climate is ungenial, and the soil shallow and stony. On the natural pastures here, however, much stock is reared, and a hardy breed of horses, while vast herds of swine feed in the forests. Where the soil is arable it is turned to account, and the vine has been grown with fair success in some districts. In the opposite extremity of Belgium is an extensive tract known as the Campine, composed for the most part of barren sand, with here and there a patch of more promising appearance. Agricultural colonies, partly free and partly compulsory, have been planted in different parts of this district with considerable success, some of the finest cattle and much excellent dairy produce coming from it. But a portion of it remains untouched. With exception of the two districts now described, there is no part of Belgium in which agriculture does not flourish; but it reaches its highest in E. and W. Flanders. Flemish husbandry partakes more of the nature of garden than of field culture, being very largely spade-farming. The chief corn crops are wheat, rye, and oats (600,000 to 700,000 acres each); but they do not suffice for the wants of the country. The chief green crops are potatoes, beet (partly for sugar), and flax, the last a most valuable crop in the Flemish rotation. The cattle are good and numerous. The horses of Flanders are admirably adapted for draught, and an infusion of their blood has contributed not a little to form the magnificent teams of the London draymen. The minerals of Belgium are highly valuable. They are almost entirely confined to the four provinces of Hainaut, Liège, Namur, and Luxemburg, and consist of iron and coal, lead, manganese, and zinc, the first two

minerals being far the most important. The iron-working district lies between the Sambre and the Meuse, and also in the province of Liège. At present the largest quantity of ore is raised in that of Namur. The coal-field has an area of above 500 square miles. The quantity of coal raised annually is about 18,000,000 tons. The export, chiefly to France, is over 5,000,000 tons, forming one of the largest and most valuable of all the Belgian exports. Belgium is also abundantly supplied with building-stone, pavement limestone, roofing-slate, and marble.

The industrial products of Belgium are very numerous, and are mostly of high character. The chief are those connected with linen, wool, cotton, metal, and leather goods. In respect of manufactures the fine linens of Flanders, and lace of South Brabant, are of European reputation. Scarcely less celebrated are the carpets and porcelain of Tournay, the cloth of Verviers, the extensive foundries, machine-works, and other iron establishments of Liège. The commerce of Belgium is large and increasing. Apart from the value of her own products, she is admirably situated for the transit trade of Central Europe, to which her fine harbour of Antwerp and excellent railway and canal system minister. The exports of Belgian produce and manufactures, which in 1840 were valued at \$28,000,000, have risen to \$250,000,000. The imports for home consumption amount to some \$300,000,000. The transit trade is valued at \$250,000,000. The articles of import are chiefly cereals, raw cotton, wool, and colonial produce; those of export principally coal and flax, tissues of flax, cotton and wool, machinery, &c. The exports to Great Britain in 1891 were to the value of over £17,250,000; the imports of British produce into Belgium about £7,375,000. More than a third of the exports of Belgian produce and manufactures are sent to France. The external trade is chiefly carried on by means of foreign (British) vessels. The total burden of the Belgian mercantile marine is only about 73,000 tons. The railways have a total length of 2800 miles, about three-fourths of this mileage belonging to the state.

The Belgian population is the densest of any European state (539 per square mile), and is composed of two distinct races—Flemish, who are of German, and Walloons, who are of French extraction. The former,

by far the more numerous, have their principal locality in Flanders; but also prevail throughout Antwerp, Limburg, and part of South Brabant. The latter are found chiefly in Hainaut, Liège, Namur, and part of Luxemburg. The Flemings speak a dialect of German, and the Walloons a corruption of French, with a considerable infusion of words and phrases from Spanish and other languages. French is the official and literary language, though Flemish is also successfully employed in literature. Almost the entire population is Roman Catholic, and there are over 1500 convents, with nearly 25,000 inmates. Protestantism is fully tolerated, and even salaried by the state, but cannot count more than 15,000 adherents. Improved means of education are now at the disposal of the people, every commune being bound to maintain at least one school for elementary education, the government paying one-sixth, the province one-sixth, and the commune the remainder of the expenditure. In all the large towns colleges (*athénées*) have been established; while a complete course for the learned professions is provided by four universities, two of them, at Ghent and Liège, established and supported by the state; one at Brussels the Free University, founded by voluntary association; and one at Louvain, the Catholic University, founded by the clergy. Although the condition of the population is, for the most part, one of comfort, yet in Flanders and South Brabant, where it is 800 per square mile, a fourth of the people is dependent on total or occasional relief, and pauper riots have repeatedly occurred.

By the Belgian constitution the executive power is vested in a hereditary king; the legislative, in the king and two chambers—the senate and the chamber of representatives—both elected by citizens paying 33s. 6d. of direct taxes, the former for eight years, and the latter for four, but one-half of the former renewable every four years, and one-half of the latter every two years. Each of the provinces is administered by a governor and is subdivided into *arrondissements administratifs* and *arrondissements judiciaires*; subdivided again, respectively, into *cantons de milice* and *cantons de justice de paix*. Each canton is composed of several communes, of which the sum total is 2514. The army is formed by conscription, to which every able man who has completed his nineteenth year is liable, and also by voluntary enlistment. The peace strength

(1891) is 48,841 officers and men; in time of war 154,780. Besides this standing army there is a *garde civique* numbering 43,647 active and 90,000 non-active men. The navy is confined to a few steamers and a small flotilla of gun-boats. The estimated revenue for 1892, chiefly from railways, direct taxation, and transport dues, was 342,546,190 francs, the estimated expenditure 339,502,685 francs. Nearly one-fourth of the expenditure is in payment of interest of the national debt, the sum total of which in 1891–92 was 2,073,560,000 francs. The coins, weights, and measures are the same, both in name and value, as those of France.

History.—The territory now known as Belgium originally formed only a section of that known to Cæsar as the territory of the Belgæ, extending from the right bank of the Seine to the left bank of the Rhine, and to the ocean. This district continued under Roman sway till the decline of the empire; subsequently formed part of the kingdom of Clovis; and then of that of Charlemagne, whose ancestors belonged to Landen and Herstal on the confines of the Ardennes. After the breaking up of the empire of Charlemagne Belgium formed part of the kingdom of Lotharingia under Charlemagne's grandson, Lothaire; Artois and Flanders, however, belonging to France by the treaty of Verdun.

For more than a century this kingdom was contended for by the kings of France and the emperors of Germany. In 953 it was conferred by the Emperor Otto upon Bruno, archbishop of Cologne, who assumed the title of archduke, and divided it into two duchies: Upper and Lower Lorraine. In the frequent struggles which took place during the eleventh century Luxemburg, Namur, Hainaut, and Liège usually sided with France, while Brabant, Holland, and Flanders commonly took the side of Germany. The contest between the civic and industrial organizations and feudalism, which went on through the twelfth and thirteenth centuries, and in which Flanders bore a leading part, was temporarily closed by the defeat of the Ghentese under Van Artevelde in 1382. In 1384 Flanders and Artois fell to the house of Burgundy, which in less than a century acquired the whole of the Netherlands. The death of Charles the Bold at Nancy, in his attempt to raise the duchy into a kingdom (1477), was followed by the succession and marriage of his daughter, Mary of Burgundy, by which

the Netherlands became an Austrian possession. With the accession, however, of the Austrian house of Hapsburg to the Spanish throne, the Netherlands, after a brief period of prosperity attended by the spread of the reformed religion, became the scene of increasingly severe persecution under Charles V. and Philip II. of Spain. Driven to rebellion, the seven northern states under William of Orange, the Silent, succeeded in establishing their independence, but the southern portion, or Belgium, continued under the Spanish yoke.

From 1598 to 1621 the Spanish Netherlands were transferred as an independent kingdom to the Austrian branch of the family by the marriage of Isabella, daughter of Philip II., with the Archduke Albert of Austria. He died childless, however, and they reverted to Spain. After being twice conquered by Louis XIV., conquered again by Marlborough, coveted by all the powers, deprived of territory on the one side by Holland and on the other by France, the Southern Netherlands were at length in 1714, by the peace of Utrecht, again placed under the dominion of Austria, with the name of the Austrian Netherlands. During the Austrian war of succession the French under Saxe conquered nearly the whole country, but restored it in 1748 by the peace of Aix-la-Chapelle. The Seven Years' War (1756-63) did not affect Belgium, and in that period, and during the peace which followed, she regained much of her prosperity under Maria Theresa and Charles of Lorraine. On the succession of Joseph II., the 'philosophic emperor,' a serious insurrection occurred, the Austrian army being defeated at Turnhout, and the provinces forming themselves into an independent state as united Belgium (1790). They had scarcely been subdued again by Austria before they were conquered by the revolutionary armies of France, and the country divided into French departments, the Austrian rule being practically closed by the battle of Fleurus (1794), and the French possession confirmed by the treaties of Campo Formio (1797) and Lunéville (1801).

In 1815 Belgium was united by the Congress of Vienna to Holland, both countries together now forming one state, the Kingdom of the Netherlands. This union lasted till 1830, when a revolt broke out among the Belgians, and soon attained such dimensions that the Dutch troops were unable to re-

press it. A convention of the great powers assembled in London, favoured the separation of the two countries, and drew up a treaty to regulate it; the National Congress of Belgium offering the crown, on the recommendation of England, to Leopold, prince of Saxe-Coburg, who acceded to it under the title of Leopold I., on July 21, 1831. In November of the same year the five powers guaranteed the crown to him by the treaty of London, and the remaining difficulties with Holland were settled in 1839, when the Dutch claims to territory in Limburg and Luxemburg were withdrawn. The reign of Leopold was for Belgium a prosperous period of thirty-four years. Leopold II. succeeded his father in 1865. In recent years the chief feature of Belgian politics has been a keen struggle between the clerical and the liberal party. Till 1878 the clerical party maintained the upper hand, but to a large extent by corruption at the elections. In 1877 a bill was passed to put down corruption, and to increase the number of town deputies to the chamber of representatives; and at the next elections, in June, 1878, the Liberals gained a majority, which they lost in 1884. In 1885, on the constitution by the Congress of Berlin of the Congo Free State, in which Leopold II. had shown an active interest, he was invited to become its sovereign, and has since held that title. Prince Baldwin, heir presumptive, died in 1891.

Belgrade (bel-grād'), capital of Serbia, on the right bank of the Danube in the angle formed by the junction of the Save with that river, consists of the citadel or upper town, on a rock 100 feet high; and the lower town, which partly surrounds it. Of late years buildings of the European type have multiplied, and the older ones suffered to fall into decay. The chief are the royal and episcopal palaces, the government buildings, the cathedral, barracks, bazaars, national theatre, and various educational institutions. It manufactures carpets, silk stuffs, hardware, cutlery, and saddlery; and carries on an active trade. Being the key of Hungary, it was long an object of fierce contention between the Austrians and the Turks, remaining, however, for the most part in the hands of the Turks until its evacuation by them in 1867. Since the treaty of Berlin (July, 1878) it has been the capital of an independent state. Pop. 40,000.

Be'lial, a word which by the translators

of the English Bible is often treated as a proper name, as in the expressions 'son of Belial,' 'man of Belial.' In the Old Testament, however, it ought not to be taken as a proper name, but it should be translated 'wickedness' or 'worthlessness.' To the later Jews Belial seems to have become what Pluto was to the Greeks, the name of the ruler of the infernal regions; and in 2 Cor. vi. 15 it seems to be used as a name of Satan, as the personification of all that is bad.

Belisa'rius (Slavonic *Beli-tzar*, White Prince), the general to whom the Emperor Justinian chiefly owed the splendour of his reign; born in Illyria about 505 A.D. He served in the body-guard of the emperor, soon after obtained the chief command of an army on the Persian frontiers, and in 530 gained a victory over a superior Persian army. The next year, however, he lost a battle, and was recalled. In the year 532 he checked the disorders in Constantinople arising from the Green and Blue factions; and was then sent with 15,000 men to Africa to recover the territories occupied by the Vandals. He took Carthage and led Gelimer, the Vandal king, in triumph through Constantinople. Dissensions having arisen in the Ostrogothic kingdom, he was sent to Italy, and though ill supplied with money and troops, stormed Naples, held Rome for a year, took Ravenna, and led captive Vitiges, the Gothic king. He rendered honourable service in later campaigns in Italy and against the Bulgarians, but was accused of conspiracy and flung into prison. He afterwards seems to have recovered his property and dignities, the story of Tzetzes (a twelfth-century monk), that Belisarius wandered about as a blind beggar, being probably an invention. He died in 565. The only weaknesses in the character of Belisarius appear in connection with his profligate wife Antonina, an associate of the Empress Theodora.

Belize (be-lēz'), the capital and only trading port of British Honduras, situated at the mouth of the southern arm of the river Belize. Exports: chiefly mahogany, rosewood, logwood, cedar, cocoa-nuts, and sugar. Pop. about 5800.

Belknap (bel'nap), JEREMY, an American author, born 1744; minister at Dover, New Hampshire, and afterwards at Boston. Died 1798. Besides his History of New Hampshire, he published two volumes of American biography, and a number of political, religious, and literary tracts.

Bell, a hollow, somewhat cup-shaped, sounding instrument of metal. The metal from which bells are usually made (by founding) is an alloy, called bell-metal, commonly composed of eighty parts of copper and twenty of tin. The proportion of tin varies, however, from one-third to one-fifth of the weight of the copper, according to the sound required, the size of the bell, and the impulse to be given. The clearness and richness of the tone depend upon the metal used, the perfection of its casting, and also upon its shape; it having been shown by a number of experiments that the well-known shape with a thick lip is the best adapted to give a perfect sound. The depth of the tone of a bell increases in proportion to its size. A bell is divided into the *body* or *barrel*, the *ear* or *cannon*, and the *clapper* or *tongue*. The *lip* or *sound-bow* is that part where the bell is struck by the clapper.

It is uncertain whether the jangling instruments used by the Egyptians and Israelites can be correctly described as bells; but it is certain that bells of a considerable size were in early use in China and Japan, and that the Greeks and Romans used them for various purposes. They are said to have been first introduced into Christian churches about 400 A.D. by Paulinus, bishop of Nola, in Campania (whence *campana* and *nola* as old names of bells); although their adoption on a wide scale does not become apparent until after the year 550, when they were introduced into France. Benedict Biscop, abbot of Wearmouth, seems to have imported bells from Italy to England in 680, but their use in Ireland and Scotland is probably of earlier date. The oldest of those existing in Great Britain and Ireland, such as the 'bell of St. Patrick's will' and St. Ninian's bell, are quadrangular and made of thin iron plates hammered and riveted together. Until the thirteenth century they were of comparatively small size, but after the casting of the Jacqueline of Paris ($6\frac{1}{2}$ tons) in 1400 their weight rapidly increased. Among the more famous bells are the bell of Cologne, 11 tons, 1448; of Dantzic, 6 tons, 1453; of Halberstadt, $7\frac{1}{2}$, 1457; of Rouen, 16, 1501; of Breslau, 11, 1507; of Lucerne, $7\frac{1}{2}$, 1636; of Oxford, $7\frac{1}{2}$, 1680; of Paris, $12\frac{4}{5}$, 1680; of Bruges, $10\frac{1}{4}$, 1680; of Vienna, $17\frac{3}{4}$, 1711; of Moscow (the monarch of all bells), 193, 1736; three other bells at Moscow ranging from 16 to 31 tons, and a fourth of 80 tons cast in 1819; the bell of Lincoln (Great Tom), $5\frac{1}{2}$, 1834; of York Minster (Great Peter), $10\frac{3}{4}$, 1845; of

Montreal, 13½, 1847; of Westminster (Big Ben), 15½, 1856, (St. Stephen), 13½, 1858; the Great Bell of St. Paul's, 17½, 1882. Others are the bells of Ghent (5), Görlitz (10¾), St. Peter's, Rome (8), Antwerp (7¼), Olmutz (18), Brussels (7), Novgorod (31), Pekin (53½).

Besides their use in churches bells are employed for various purposes, the most common use being to summon attendants or domestics in private houses, hotels, &c. Bells for this purpose are of small size and may be held in the hand and rung, but most commonly are rung by means of wires stretched from the various apartments to the place where the bells are hung. Bells rung by electricity are now becoming common in hotels and other establishments.

Bells, as the term is used on shipboard, are the strokes of the ship's bell that proclaim the hours. Eight bells, the highest number, are rung at noon and every fourth hour afterwards, *i.e.* at 4, 8, 12 o'clock, and so on. The intermediary periods are indicated thus: 12:30, one bell; 1 o'clock, 2 bells; 1:30, 3 bells, &c., until the eight bells announce 4 o'clock, when the series recommences 4:30, one bell; 5 o'clock, two bells, &c. The even numbers of strokes thus always announce hours, the odd numbers half-hours.

Bell, ALEXANDER GRAHAM, inventor of the telephone, was born at Edinburgh, 1847. He was educated at Edinburgh and in Germany, and settled in Canada in 1870. In 1872 he went to the United States and introduced for the education of deaf-mutes the system of visible speech contrived by his father Alexander Melville Bell. He became professor of vocal physiology in Boston University, and exhibited his telephone, designed and partly constructed some years before, at the Philadelphia exhibition in 1876. He has also been the inventor of the photophone.

Bell, ALEXANDER MELVILLE, father of the above, was born at Edinburgh in 1819. He was a distinguished teacher of elocution in that city; in 1865 removed to London to act as a lecturer in University College; and in 1870 went to Canada and became connected with Queen's College, Kingston. He is inventor of the system of 'visible speech,' in which all the possible articulations of the human voice have corresponding characters designed to represent the respective positions of the vocal organs. This system has been successfully employed in teaching the

deaf and dumb to speak. Besides writing on this subject he has written on elocution, stenography, &c.

Bell, ANDREW, D.D., the author of the mutual instruction or 'Madras' system of education, was born at St. Andrews, Scotland, in 1753, died at Cheltenham 1832. He took orders in the Church of England, and in 1789 went to India, where he became chaplain at Fort St. George, Madras, and manager of the institution for the education of the orphan children of European soldiers. Failing to retain the services of properly qualified ushers, he resorted to the expedient of employing the scholars in mutual instruction; and after his return to Britain published a treatise on the monitorial or Madras system of education. Joseph Lancaster, a dissenter, began to work on the system, and a considerable amount of friction and rivalry ensued between the dissenters and the church party. Dr. Pell lived long enough to witness the introduction of his system into 12,973 national schools, educating 900,000 English children, and to know that it was employed extensively in almost every other civilized country. He latterly became a prebendary of Westminster, and was master of Sherborn Hospital, Durham. At his death he left £120,000 for the erection and maintenance of schools on his favourite system, £60,000 of which was set apart for his native town.

Bell, SIR CHARLES, anatomist and surgeon, was born at Edinburgh in 1774, and studied anatomy there under the superintendence of his brother John (see below). In 1804 he went to London, and soon distinguished himself as a lecturer on anatomy and surgery. In 1814 he was appointed surgeon to the Middlesex Hospital, and in 1821 he communicated to the Royal Society a paper on the nervous system, containing among other things the important discovery that the nerve-filaments of sensation are distinct from those of motion. It at once attracted general attention and established his reputation. In 1824 he accepted the chair of anatomy and surgery to the London College of Surgeons, and in 1836 that of surgery in the University of Edinburgh. He died suddenly in 1842. He was the author of many professional works of high repute on anatomy and surgery, and of the *Bridge-water Treatise, The Hand: its Mechanism and Vital Endowments as evincing Design*. He received the honour of knighthood in 1831.

Bell, GEORGE JOSEPH, brother of Sir Charles and John Bell (see both names), an eminent lawyer, was born in Edinburgh in 1770, died 1843. He is the author of several standard law-books, the most important of which is *The Principles of the Law of Scotland*, which has gone through several editions.

Bell, HENRY, the first successful applier of steam to the purposes of navigation in Europe, was born in Linlithgowshire 1767, died at Helensburgh 1830. He was apprenticed as a millwright, and afterwards served under several engineers, including Rennie. He settled in Glasgow in 1790, and subsequently in Helensburgh. In 1798 he turned his attention specially to the steam-boat, the practicability of steam navigation having been already demonstrated. In 1812 the *Comet*, a small thirty-ton vessel built at Glasgow under Bell's directions, and driven by a three horse-power engine made by himself, commenced to ply between Glasgow and Greenock, and continued to run till she was wrecked in 1820. This was the beginning of steam navigation in Europe. It has been asserted that Fulton, who started a steamer on the Hudson in 1807, obtained his ideas from Bell in the previous year. Bell is also credited with the invention of the 'discharging machine' used by calico-printers. A monument has been erected to his memory at Dunglass Point on the Clyde.

Bell, HENRY GLASSFORD, poet, miscellaneous writer, and lawyer; born in Glasgow 1803, died 1874. He was educated at the Glasgow High School and Edinburgh University. In 1828 he became editor of the *Edinburgh Literary Journal*, which had a short but brilliant career. In 1832 he passed as advocate, and in 1836 competed with Sir W. Hamilton for the chair of logic and metaphysics in Edinburgh University. In 1839 he was appointed sheriff-substitute of Lanarkshire, and in 1867 sheriff-principal. Author of several volumes of poetry, a *Life of Mary Queen of Scots*, &c.

Bell, JAMES, Scottish geographical writer, born 1769, died 1833. His first literary work was on the *Glasgow Geography*, a popular work of the period, which was in 1822, chiefly by the labours of Mr. Bell, extended to five vols. It formed the basis of his principal work, *A System of Popular and Scientific Geography*, published at Glasgow in six vols. His *Gazetteer of England and Wales* was in the course of publication at the time of his death.

Bell, JOHN, a distinguished surgeon, elder brother of Sir Charles Bell, born in Edinburgh 1763, died at Rome 1820. After completing his professional education he travelled for a short time in Russia and the N. of Europe; and on his return to Edinburgh began to deliver extra-mural lectures on surgery and midwifery. These lectures, which he delivered between the years 1786 and 1796, were very highly esteemed, and speedily brought him into an extensive practice as a consulting and operating surgeon.

Bell, JOHN, born near Nashville, Tenn., 1797, died at Cumberland, 1869; lawyer, representative in Congress and Speaker of the House; candidate for Presidency 1860.

Bell, JOHN, English sculptor, born at Norfolk 1811. His best-known works are the *Eagle Slayer*, *Una* and the *Lion*, *The Maid of Saragossa*, *Imogen*, *Andromeda*, statues of Lord Falkland, Sir Robert Walpole, Newton, Cromwell, &c., and the *Wellington Memorial* in Guildhall. He is also one of the sculptors of the *Guards' Monument* in Waterloo Place, London, and the *Prince Consort Memorial* in Hyde Park. He is the author of several professional treatises, and of a drama, *Ivan: a Day and a Night in Russia*.

Bell, ROBERT, journalist and miscellaneous writer, born in Cork 1800, died in London 1867. He settled in London in 1828, edited the *Atlas* for several years, and afterwards the *Monthly Chronicle*, *Mirror*, and *Home News*. He compiled several volumes of *Lardner's Cabinet Cyclopædia*; but he is best known by his annotated edition of the *British Poets*, the first volume of which appeared in 1854, and which was carried through twenty-nine volumes. He also wrote several plays and novels.

Bell, THOMAS, English zoologist, born at Poole, Dorset, 1792, died at Selborne, Hampshire, 1880. He became a member of the Royal College of Surgeons in 1815, and soon secured a large practice as a dentist. In 1832 he was appointed professor of zoology in King's College, London. His best-known separate works are his histories of *British Quadrupeds*, *British Reptiles*, and *British Stalk-eyed Crustacea*, published in Van Voorst's series. In 1877 he published an excellent edition of *White's Natural History of Selborne*.

Bel'la, STEFANO DELLA, an engraver, born at Florence in 1610, died 1664. In 1642 he went to Paris, where he was employed

by Cardinal Richelieu. He returned to Florence and became the teacher in drawing of Cosmo de' Medici. It is said that he engraved 1400 plates.

Belladon'na, a European plant, *Atröpa Belladonna*, or deadly nightshade, nat. order Solanaceæ. It is native in Britain. All parts of the plant are poisonous, and the incautious eating of the berries has often produced death. The inspissated juice is commonly known by the name of extract of belladonna. It is narcotic and poisonous, but is of great value in medicine, especially in nervous ailments. It has the property of causing the pupil of the eye to dilate. The fruit of the plant is a dark brownish-black shining berry. The name signifies 'beautiful lady,' and is said to have been given from the use of the plant as a cosmetic.

Belladonna Lily, so called on account of its beauty, a species of *Amaryllis* (*A. Belladonna*) with delicate blushing flowers clustered at the top of a leafless flowering stem. It is a native of the Cape of Good Hope and of the West Indies.

Bellaire, a town of the U. States, Ohio, 5 miles below Wheeling, on the Ohio; numerous manufacturing works. Pop. 9934.

Bellamy, (bel'-ä-mi), JACOBUS, a Flemish poet, was born at Flushing in the year 1757, and died in 1786. A volume of sentimental and anacreontic poems was published in 1782, and was followed in 1785 by a collection of his patriotic songs; under the title *Vaderlandsche Gezangen*, which secured him a place among the first poets of his nation. He ranks as one of the restorers of modern Dutch poetry.

Bell-animalcule. See *Vorticella*.

Bel'armine, ROBERT. See next article.

Bellarmino, ROBERTO, a cardinal and celebrated controversialist of the Roman Church, born at Monte Pulciano in Tuscany in 1542, died at Rome 1621. He was ordained a priest in 1569 by Jansenius, bishop of Ghent, and placed in the theological chair of the University of Louvain. He was made a cardinal on account of his learning, by Clement VIII., and in 1602 created Archbishop of Capua. Paul V. recalled him to Rome, on which he resigned his archbishopric without retaining any pension on it as he might have done. Bellarmino, whose life was a model of Christian asceticism, is one of the greatest theologians, particularly in polemics, that the Church of Rome has ever produced. He had the double merit with the court of Rome of supporting her

temporal power and spiritual supremacy to the utmost, and of strenuously opposing the reformers. The talent he displayed in the latter controversy called forth all the similar ability on the Protestant side; and for a number of years no eminent divine among the reformers failed to make his arguments a particular subject of refutation. His principal work is *Disputationes de Controversiis Fidei adversus hujus Temporis Hæreticos*.

Bellary (bel-ä'ri), a town in India, presidency of Madras, capital of a district of the same name, 280 miles north-west of Madras; a military station, with a fort crowning a lofty rock, and other fortifications. Pop. 53,460.—The district was ceded to the British in 1800. Area, 11,007 square miles; pop. 1,336,696.

Bellay (bel-ä), JOACHIM DU, distinguished French poet, known as the French Ovid; born about 1524, died 1560. He joined Ronsard, Daurat, Jodelle, Belleau, Baif, and De Tisard in forming the 'Pleiad,' a society the object of which was to bring the French language on a level with the classical tongues. Bellay's first contribution was *La Défense et Illustration de la Langue Française*. His chief publications in verse are *Recueil de Poésie*; a collection of love-sonnets called *L'Olive*; *Les Antiquitez de Rome*; *Les Regrets*; and *Les Jeux Rustiques*. In 1555 he became canon of Notre Dame, and a short time before his death he was made archbishop of Bordeaux. Spenser translated some of his sonnets into English.

Bell-bird, the name given to the *Arapunga alba*, a South American passerine bird, so named from its sonorous bell-like notes; and also to the *Myzantha melanophrys* of Australia, a bird of the family Meliphagidæ (honey-suckers), whose notes also resemble the sound of a bell.

Bell, Book, and Candle, a solemn mode of excommunication used in the R. Cath. Ch. After the sentence was read, the book was closed, a lighted candle thrown to the ground, and a bell tolled as for one dead.

Bell-crank, in machinery, a rectangular lever by which the direction of motion is changed through an angle of 90°, and by which its velocity-ratio and range may be altered at pleasure by making the arms of different lengths. It is much employed in machinery, and is named from its being the form of crank employed in changing the direction of the bell-wires of house-bells.

Belle-Alliance, a farm 13 m. s. of Brussels, famous as the position occupied by the centre of the French army in the battle of Waterloo, June, 1815.

Belleau (bel-ō), REMY, French poet of the Renaissance, and member of the Pleiad (see *Bellay*); born 1528, died 1577. Chief works: Commentaries on Ronsard's Amours and La Bergerie, a pastoral.

Bellefonte, borough, capital of Centre co., Penna. Contains a noted spring; is a summer resort. It has a number of diverse industries. Pop. 1890, 3,946.

Belle-Isle (bel-ēl), or BELLE-ISLE-EN-MER, a French island in the Bay of Biscay, dep. of Morbihan, 8 m. s. of Quiberon Point; length 11 m., greatest breadth 6 m. Pop. about 10,000, largely engaged in the pilchard fishing. The capital is Le Palais on the N.E. coast.

Belle-Isle (bel-il'), a rocky island, 9 m. long, at the eastern entrance to the Straits of Belle-Isle, the channel, 15 m. wide, between Newfoundland and the coast of Labrador. Steamers from Glasgow and Liverpool to Quebec round the north of Ireland commonly go by this channel in summer as being the shortest route.

Belleisle (bel-ēl), CHARLES LOUIS AUGUSTE FOUQUET, COUNT DE, Marshal of France, born 1684, died 1761. He distinguished himself during the war of the Spanish succession, afterwards in Spain and Germany, where, under Berwick, he took Treves and Trarbach, and had a distinguished share in the siege of Phillipsburg. The cession of Lorraine to France was principally his work. He was created marshal of France about 1740; commanded in Germany against the Imperialists, took Prague by assault; but the King of Prussia having made a separate peace, he was compelled to retreat, which he performed with admirable skill. In 1744 he was taken prisoner by the English, but was soon exchanged. In 1748 he was made a duke and peer of France, and the department of war was committed to his charge.

Bel'lenden, JOHN. See *Ballentyne*.

Bel'lenden, WILLIAM, a Scottish writer, distinguished for the elegance of his Latin style, born between 1550 and 1560, probably at Lasswade, died between 1631 and 1633. He was professor of belles-lettres at Paris.

Beller'ic, the astringent fruit of *Terminalia bellerica*. See *Myrobolan*.

Beller'ophon, or HIPPON'OUS, in Greek

mythology, a hero who, having accidentally killed his brother, fled to Proetus, king of Argos, whose wife, Antæa, fell in love with him. Being slighted, she instigated her husband to send him to her father Iobates, king of Lycia, with a letter urging him to put to death the insulter of his daughter. That king, not wishing to do so directly, imposed on him the dangerous task of conquering the Chimæra, which Bellerophon, mounted on Pegasus, a gift from Athena, overpowered. Iobates afterwards gave him his daughter in marriage, and shared his kingdom with him. He attempted to soar to heaven on the winged horse Pegasus, but fell to the earth, where he wandered about blind, till he died.

Beller'ophon, a large genus of fossil nautiloid shells, consisting of only one chamber, like the living Argonaut. They occur in the Silurian, Devonian, and Carboniferous strata.

Belles-lettres (bel-let-r), polite or elegant literature: a word of somewhat vague signification. Rhetoric, poetry, fiction, history, and criticism, with the languages in which the standard works in these departments are written, are generally understood to come under the head of *belles-lettres*.

Belleville (bel-vil'), town of the United States, capital of St. Clair co., Illinois, with important manufactures, and a large rolling-mill. Pop. 1890, 15,360.

Belleville, a town of Canada, prov. Ontario, capital of Hastings co., on the Bay of Quinté, at the mouth of the Moira, with flourishing trade and manufactures. It is rather a fine town, and has a Methodist Episcopal University for men and women (two colleges). Pop. 1891, 9914.

Belley (bel-ā), a town, France, department Ain. It was a place of note in the time of Julius Cæsar, and is the seat of a bishopric, founded in 412. Pop. 4792.

Bell-flower, a common name for the species of *Campanula*, from the shape of the flower, which resembles a bell.

Bellini (bel-ē'nē), JACOPO, and his two sons, GENTILE and GIOVANNI, the founders of the Venetian school of painting. The father excelled in portraits, but very little of his work is extant. He died about 1470. Gentile was born in 1421, and in 1479 went to Constantinople, Mohammed II. having sent to Venice for a skilful painter; died at Venice in 1501. Giovanni was born about 1424, and died about 1516. He contributed much to make oil-painting popular, and has

left many noteworthy pictures. Titian and Giorgione were among his pupils.

Bellini (bel-ē'nē), VINCENZO, a celebrated composer, born at Catania in Sicily in 1802, died 1835. He was educated at Naples under Zingarelli, commenced writing operas before he was twenty, and composed for the principal musical establishments in Europe. His most celebrated works are *I Montecchi e Capuleti* (1829); *La Sonnambula* (1831); *Norma*, his best and most popular opera; and *I Puritani* (1834).

Bellinzo'na, a town of Switzerland, capital of the canton Ticino; charmingly situated on the left bank of the Ticino about 5 miles from its embouchure in the N. end of Lago Maggiore. It occupies a position of great military importance. Pop. about 3000.

Bellis, the genus to which the daisy belongs.

Bellisle. See *Belle-Isle*.

Bellmann, KARL MICKEL, the most original among the Swedish lyric poets, was born in 1740, died 1795. His songs, in which love and liquor are common themes, are sung over the whole country, and 'Bellmann' societies hold an annual festival in his honour.

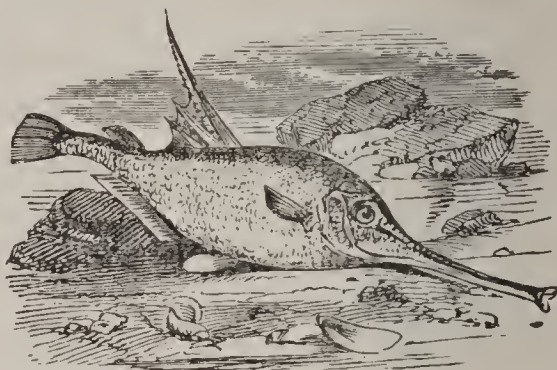
Bell-metal. See *Bell*.

Bello'na, the goddess of war among the Romans, often confounded with Minerva. She was the sister of Mars, or, according to some, his daughter or his wife. She is described by the poets as armed with a bloody scourge, her hair dishevelled, and a torch in her hand.

Bellet (bel-ō), JOSEPH RENÉ, a French naval officer, born in Paris 1826, drowned 1853. In 1851 he joined the expedition to the Polar regions in search of Sir John Franklin, and took part in several explorations. He was drowned in an attempt to carry despatches to Sir Edward Belcher over the ice. His diary was published in 1855.

Bellows, an instrument or machine for producing a strong current of air, and principally used for blowing fires, either in private dwellings or in forges, furnaces, mines, &c. It is so formed as, by being dilated and contracted, to inhale air by an orifice which is opened and closed with a valve, and to propel it through a tube upon the fire. It is an ancient contrivance, being known in Egypt, India, and China many ages ago, while forms of it are used among savage tribes in Africa. Bellows of very great power are called blowing-machines, and are wrought by machinery driven by steam.

Bellows-fish, an acanthopterygious fish of the genus *Centriscus* (*C. Scolopax*); called also the Trumpet-fish or Sea-snipe. It is not uncommon in the Mediterranean, but



Bellows-fish (*Centriscus Scolopax*).

rare in the British seas. It is 4 or 5 inches long, and has an oblong oval body and a tubular elongated snout, which is adapted for drawing from among sea-weed and mud the minute crustacea on which it feeds.

Belloy (bel-wä), PIERRE LAURENT BUIRETTE DE, French dramatist, born 1727, died 1775. His principal plays are *Zelmire*, a tragedy; *Le Siège de Calais*, which was immensely popular; *Gaston et Bayard*, which admitted him into the French Academy; and *Pierre le Cruel*. He was one of the first to introduce native heroes upon the stage.

Bell Rock, or INCH CAPE, a dangerous reef surmounted by a lighthouse, situated in the German Ocean about 12 miles from Arbroath, nearly opposite the mouth of the river Tay. It is said that in former ages the monks of Aberbrothock caused a bell to be fixed on this reef, which was rung by the waves, and warned the mariners of this highly dangerous place. Tradition also says that the bell was wantonly cut away by a pirate, and that a year after he perished on the rock himself with ship and plunder. Southey has a well-known poem on this subject. The lighthouse was erected in 1808-11 by Robert Stevenson from Rennie's plan at a cost of upwards of £60,000. It rises to a height of 120 feet; has a revolving light showing alternately red and white every minute, and visible for upwards of 15 miles. It also contains two bells which are rung during thick weather. The reef is partly uncovered at ebb-tides.

Bells, on shipboard. See *Bell*.

Belluno (bel-lö'nō), a city of Northern Italy, capital of a province of the same name, on the Piave, 48 m. N. of Venice. Has a cathedral, a handsome theatre, &c.;

and manufactures of silk, straw-plait, leather, &c. Pop. 16,000. The province has an area of 1271 sq. miles, and a pop. of 195,419.

Beloe (bē'lo), WILLIAM, English clergyman and miscellaneous writer, born 1756, died 1817. He was educated at Cambridge, and latterly was presented to the rectory of Allhallows, London Wall, and subsequently to stalls in Lincoln Cathedral and St. Paul's. In 1803 he became keeper of the printed books in the British Museum, a post he did not retain. His chief publications are *Anecdotes of Literature and Scarce Books*.

Beloit, Rock county, Wis., 69 miles southwest of Milwaukee, the seat of Beloit College; various factories. Pop. 1890, 6315.

Bel'omancy, a kind of divination by arrows, practised by the ancient Scythians and other nations. One of the numerous modes was as follows:—A number of arrows, being marked, were put into a bag or quiver, and drawn out at random; and the marks or words on the arrow drawn determined what was to happen. See Ezek. xxi. 21.

Belon (bè-lōn), PIERRE, French naturalist, born 1517, murdered by robbers 1564. He was educated as a physician, and travelled in Germany, Greece, Asia Minor, Egypt, &c. His chief work was a *Natural History of Birds*, 1555.

Beloo'chistan. See *Baluchistan*.

Belpas'so, a town of Sicily, on the southern slope of Mount Etna, in the province of Catania, and 8 miles from the town of that name. Pop. about 7500.

Bel'per, a town, England, Derbyshire, in a valley, on the Derwent, 7 miles N. of Derby, with large cotton-mills, foundries, &c., and in the neighbourhood numerous collieries. Pop. 1891, 10,420.

Belshaz'zar, the last of the Babylonian kings, who reigned conjointly with his father Nabonadius. He perished B.C. 538, during the successful storming of Babylon by Cyrus. This event is recorded in the book of Daniel; but it is difficult to bring the particulars there given into harmony with the cuneiform inscriptions.

Belt, BELTING, a flexible endless band, or its material, used to transmit motion or power from one wheel, roller, or pulley to another, and common in various kinds of machinery. Driving belts are usually made of leather or india-rubber, or some woven material, but ropes and chains are also used for the same purpose.

Belt, THE GREAT and LITTLE, two straits connecting the Baltic with the Cattegat,

the former between the islands of Zealand and Funen, about 18 miles in average width; the latter between Funen and the coast of Schleswig, at its narrowest part not more than a mile in width.

Bel'tane (a Celtic name of unknown origin), a sort of festival formerly observed in Ireland and Scotland, and still kept up in a fashion in some remote parts. It is celebrated in Scotland on the first day of May (O.S.), usually by kindling fires on the hills and eminences. In early times it was compulsory on all to have their domestic fires extinguished before the Bel-tane fires were lighted, and it was customary to rekindle the former from the embers of the latter. This custom no doubt derived its origin from the worship of the sun.

Belton, the capital of Bell county, Tex., 55 miles northeast of Austin, the seat of the Chamberlain Institute; 2 banks and a Masonic Temple. Pop. in 1890, 4300.

Belu'chistan. See *Baluchistan*.

Beluga (be-lö'ga) (*Beluga arctica* or *Delphinaptērus leucas*), a kind of whale or dolphin, the white whale or white fish, found in the northern seas of both hemispheres. It is from 12 to 18 feet in length, and is pursued for its oil (classed as 'porpoise oil') and skin. In swimming the animal bends its tail under its body like a lobster, and thrusts itself along with the rapidity of an arrow. A variety of sturgeon (*Acipenser huso*) found in the Caspian and Black Sea is also called beluga.

Bel'us, the same as Bel or Baal, a divinity of the ancient Babylonians. See *Babylonia*, *Babel*.

Belvedere (bel've-dēr), in Italian arch. the uppermost story of a building open to the air, at least on one side, and frequently on all, for the purpose of obtaining a view of the country and for enjoying cool air. A portion of the Vatican in which several of the most important statues in the world are preserved has this name.

Belzo'ni, GIOVANNI BATTISTA (John Baptist), an enterprising traveller, was born at Padua in 1778, and died near Benin 1823. In 1803 he emigrated to England, where, being endowed with an almost gigantic figure and commensurate strength, he for a time gained his living as an athlete. In 1815 he visited Egypt, where he made a hydraulic machine for Mehemet Ali. He then devoted himself to the exploration of the antiquities of the country, being supplied with funds by Mr. Salt, the British

consul-general. He succeeded in transporting the bust of Memnon (Rameses II.) from Thebes to Alexandria, from whence it came to the British Museum; explored the great temple of Rameses II. at Abu-Simbel; opened the tomb of Seti I., from which he obtained the splendid alabaster sarcophagus bought by Sir John Soane for £2000; and he also succeeded in opening the second (King Chephren's) of the pyramids of Ghizeh. He afterwards visited the coasts of the Red Sea, the city of Berenice, Lake Mœris, the Lesser Oasis, &c. The narrative of his discoveries and excavations in Egypt and Nubia was received with general approbation. He died during a projected journey to Timbuctoo.

Bem, JOSEPH, a Polish general, born at Tarnow, in Galicia, in 1795, died at Aleppo 1850. His first service was in the French expedition against Russia in 1812. He served in the Polish army in the revolution of 1830, after which he proceeded to Paris, where for the next sixteen years he continued to reside, occupying himself partly with political schemes and partly with scientific pursuits. In 1848 he joined the Hungarian army, and in the following year obtained several successes against the Austrians and Russians; but after the defeat at Temesvar he retired into Turkey, where he embraced Mohammedanism and was made a pasha.

Bembecidæ (-bes'i-dē), a family of wasp-like hymenopterous insects with stings, mostly natives of warm countries, and known also as Sand-wasps. The female excavates cells in the sand, in which she deposits, together with her eggs, various larvæ or perfect insects stung into insensibility, as support for her progeny when hatched. They are very active, fond of the nectar of flowers, and delight in sunshine. *Bembex* is the typical genus of this family.

Bembo, PIETRO, celebrated Italian scholar, born at Venice in 1470, died 1547. At Venice he became one of a famous society of scholars which had been established in the house of the printer Aldus Manutius. In 1512 he became secretary to Leo X., after whose death he retired to Padua. He was next appointed historiographer to the Republic of Venice, and librarian of the library of St. Mark. Pope Paul III. conferred on him, in 1539, the hat of a cardinal, and soon after the bishoprics of Gubbio and Bergamo. The most important of his works are: *History of Venice from 1487 to*

1513, written both in Latin and Italian; *Le Prose*, dialogues in which the rules of the Italian language are laid down; *Gli Asolani*, dialogues on the nature of love; and *Le Rime*, a collection of sonnets and canzonets.

Bem'bridge Beds, in geol. a fossiliferous division of the Upper Eocene strata, principally developed at Bembridge in the Isle of Wight, consisting of marls and clays resting on a compact, pale-yellow or cream-coloured limestone, called Bembridge limestone. Their most distinctive feature is the mammalian remains of the *Palæotherium* and *Anoplotherium*.

Ben (Hebrew, 'son'), a prepositive syllable signifying in composition 'son of,' found in many Jewish names, as *Bendavid*, *Benasser*, &c. — *Beni*, the plural, occurs in several modern names, and in the names of many Arabian tribes.

Ben, a Gaelic word signifying mountain, prefixed to the names of many mountains in Scotland north of the Firths of Clyde and Forth; as, *Ben Nevis*, *Ben MacDhui*, &c.

Ben, OIL OF, the expressed oil of the ben-nut, the seed of *Moringa pterygosperma*, the ben or horse-radish tree of India. The oil is inodorous, does not become rancid for many years, and is used by perfumers and watchmakers.

Benares (be-nä'rez; in Sanskrit, *Vārānasī*), a town in Hindustan, North-west Provinces, administrative headquarters of a district and division of the same name, on the left bank of the Ganges, from which it rises like an amphitheatre, presenting a splendid panorama of temples, mosques, palaces, and other buildings with their domes, minarets, &c. Fine ghauts lead down to the river. It is one of the most sacred places of pilgrimage in all India, being the headquarters of the Hindu religion. The principal temple is dedicated to Siva, whose sacred symbol it contains. It is also the seat of government and other colleges, and of the missions of various societies. Benares carries on a large trade in the produce of the district and in English goods, and manufactures silks, shawls, embroidered cloth, jewelry, &c. The population, including the neighbouring cantonments at Sikraul (Secrole), in 1891, was 222,420. The commissionership or division has an area of 18,337 sq. miles, and a pop. of 9,820,728 of whom 76.53 per cent depend on agriculture. The district has an area of 998 sq. miles, and a pop. of 892,694.

Benbec'ula, an island of Scotland in the Outer Hebrides belonging to Inverness-shire, and lying between North and South Uist, separated from the latter by a channel only $\frac{1}{2}$ mile broad and dry at low water. It is circular in shape, about 8 miles in diameter, low, flat, and infertile, with innumerable lakelets and inlets of the sea. Pop. 1781.

Ben'bow, JOHN, an English admiral, born in Shrewsbury about 1650, died 1702. For his skill and valour in an action with a Barbary pirate he was promoted by James II. to the command of a ship of war. William III. employed him in protecting the English trade in the Channel, which he did with great effect, and he was soon promoted to the rank of rear-admiral. In 1701 he



Benares, from the River.

sailed to the West Indies with a small fleet, and in August of the following year he fell in with the French fleet under Du Casse, and in the heat of the action a chain-shot carried away one of his legs. At this critical instant, being most disgracefully abandoned by several of the captains under his command, the whole fleet effected its escape. Benbow, on his return to Jamaica, brought the delinquents to a court-martial, by which two of them were condemned to be shot. He himself died of his wounds.

Bench, the dais or elevated part of a court-room where the judges sit. Hence the persons who sit as judges. The *King's* or *Queen's Bench*, in England, was formerly a court in which originally the sovereign sat in person, and which accompanied his

household. The *bench of bishops*, or *Episcopal bench*, is a collective designation of the bishops who have seats in the House of Lords.

Benchers, in England, senior members of the Inns of Court who have the entire management of their respective inns, the power of punishing barristers guilty of misconduct, and the right to admit or reject candidates to the bar.

Bencoo'len (Dutch, *Benkoelen*), a seaport of Sumatra, on the s.w. coast. The English settled here in 1685, and retained the place and its connected territory till 1825, when they were ceded to the Dutch in exchange for the settlements on the Malay Peninsula; since then Bencoolen has greatly declined. Pop. 6870.

Bend, in heraldry, one of the nine honourable ordinaries, containing a third part of the field when charged and a fifth when plain, made by two lines drawn diagonally across the shield from the dexter chief to the sinister base point. The *bend sinister* differs only by crossing in the opposite direction, diagonally from the sinister chief to the dexter base. It indicates illegitimacy.



Bend.

Bender', a town and fortress of Russia, in Bessarabia, on the Dniester. Its commerce is important, and it carries on some branches of manufacture. Pop. 24,625.

Bender-Abbas, a seaport of Southern Persia opposite the island of Ormuz. Pop. 8000.

Ben'edek, LUDWIG VON, Austrian general, born 1804, died 1881. Fought against the Italians in 1848, and afterwards against the Hungarian patriots. He distinguished himself at Solferino in the campaign of 1859; and in the war with Prussia in 1866 he commanded the Austrian army till after his defeat at Sadowa, when he was superseded.

Benedic'ite (L. 'bless ye'), the canticle in the Book of Common Prayer in the morning service, also called the Song of the Three Holy Children: 'O, all ye works of the Lord, *bless ye* the Lord.' It is as old as the time of St. Chrysostom.

Ben'edict, the name of fourteen popes, the first of the name succeeding to the papal chair on the death of John III. in 574. The first deserving of notice is Benedict IX., who succeeded John XIX. in 1033, being placed on the papal throne as a boy of twelve years. His licentiousness caused him to be ignominiously expelled by the citizens, who elected Sylvester III. Six months after he regained the ascendancy, and excommunicated Sylvester; but finding the general detestation too strong to permit him to resume his chair, sold it to John Gratianus, who assumed the title of Gregory VI. There was thus a trio of popes, and the emperor, Henry III., to put an end to the scandal, deposed all the three. He died in 1054.—**BENEDICT XIII.**, a learned and well-disposed man, originally Cardinal Orsini and Archbishop of Benevento, became pope in 1724. He bestowed his confidence on Cardinal Coscia, who was unworthy of it, and abused it in gratifying his avarice. He

died in 1730, and was succeeded by Clement XII.—**BENEDICT XIV.**, PROSPERO LAMBERTINI, born at Bologna in 1675, died 1758, a man of superior talents, passionately fond of learning, of historical researches, and monuments of art. Benedict XIII. made him, in 1727, bishop of Ancona; in 1728 cardinal, and in 1732 archbishop of Bologna. In every station he fulfilled his duties with the most conscientious zeal. He succeeded Clement XII. in 1740, and showed himself a liberal patron of literature and science. He was the author of several esteemed religious works.

Benedict, St., the founder of the first religious order in the West; born at Nursia, in the province of Umbria, Italy, A.D. 480, died 543. In early youth he renounced the world and passed some years in solitude, acquiring a great reputation for sanctity. Being chosen head of a monastery his strictness proved too great for the monks, and he was forced to leave. The rule for monks, which he afterwards drew up, was first introduced into the monastery on Monte Cassino, in the neighbourhood of Naples, founded by him. His *Regula Monachorum*, in which he aimed, among other things, at repressing the irregular lives of the wandering monks, gradually became the rule of all the western monks. Under his rule the monks, in addition to the work of God (as he called prayer and the reading of religious writings), were employed in manual labour, in the instruction of the young, and in copying manuscripts, thus preserving many literary remains of antiquity. See *Ene-dictines*.

Benedict, SIR JULIUS, pianist and composer, born at Stuttgart 1804, died at London 1885. He took up his residence in England in 1835, and was knighted in 1871. Principal works: the operas of *The Gipsy's Warning*, *Undine*, *St. Cecilia*, *Lily of Killarney*, and *Graziella*.

Benedict Biscop, an Anglo-Saxon monk, born of a noble Northumbrian family in 628 or 629, died in the monastery of Wearmouth 690. At the age of twenty-five he accompanied Wilfrid on a pilgrimage to Rome. Here he lived for more than ten years, when he returned to England; but not very long after he again went to Rome on a mission from the King of Northumbria. On his way back he entered the Benedictine monastery of Lerins, in Provence, where he took the tonsure, and remained some time. On a third visit to Rome he was commis-

sioned to return to England as assistant and interpreter to Theodoric, Archbishop of Canterbury. In 674 he founded a monastery at the mouth of the Wear, and endowed it with numerous books, pictures, and relics obtained by him on his various journeys to Rome. He founded, in 682, a second monastery at Jarrow, dependent on that of Wearmouth. His great pupil the 'Venerable Bede,' who was a monk in the monastery of Jarrow, and who wrote his life, was undoubtedly much indebted to the collections made by Benedict for the learning he acquired.

Benedic'tine, a liqueur prepared by the Benedictine monks of the abbey of Fécamp, in Normandy, consisting of spirit (fine brandy) containing an infusion of the juices of plants, and said to possess digestive, antispasmodic, and other virtues, and to have prophylactic efficacy in epidemics. Made in the same way since 1510.

Benedictines, members of the most famous and widely-spread of all the orders of monks, founded at Monte Casino, about half-way between Rome and Naples, in 529,



Benedictine Monk.

by St. Benedict. No religious order has been so remarkable for extent, wealth, and men of note and learning as the Benedictines. Among the branches of the order the chief were the Cluniacs, founded in 910 at Clugny in Burgundy; the Cistercians, founded in 1098, and reformed by St. Bernard in 1116; and the Carthusians from the Chartreuse, founded by Bruno about 1080. The order was probably introduced into

England about 600 by St. Augustine of Canterbury, and a great many abbeys, and all the cathedral priories of England, save Carlisle, belonged to it. In Britain the Benedictines were called *Blackfriars*, from the colour of their habit, which consisted of a loose black gown with large wide sleeves, and a cowl on the head ending in a point. The Benedictines have produced many valuable literary works. The fraternity of St. Maur, founded in 1618, had in the beginning of the eighteenth century 180 abbeys and priories in France, and acquired by means of its learned members, such as Mabillon, Montfaucon, and Martène, merited distinction. They published the celebrated chronological work *L'Art de Verifier les Dates*, and edited many ancient authors.

Benedic'tus (L., 'blessed'), the song of Zacharias (Luke i. 68-79), introduced into the Book of Common Prayer in the morning service.

Ben'efice, an ecclesiastical living; a church endowed with a revenue for the maintenance of divine service. Vicarages, rectories, perpetual curacies, and chaplaincies are termed benefices, in contradistinction to dignities, such as bishoprics, &c.

Benefit of Clergy, was a privilege by which formerly in England the clergy accused of capital offences were exempted from the jurisdiction of the lay tribunals, and left to be dealt with by their bishop. Though originally it was intended to apply only to the clergy or clerks, latterly every one who could read was considered to be a clerk, and the result of pleading 'his clergy' was tantamount to acquittal. A layman could only receive the benefit of clergy once, however, but he was not allowed to go without being branded on the thumb, a punishment which latterly might be commuted for whipping, imprisonment, or transportation. Abolished in 1827.

Benefit Societies. See *Building Societies* and *Friendly Societies*.

Beneke (ben'e-ke), FRIEDRICH EDWARD, a German philosophical writer, born 1798, died 1854. He began lecturing at Berlin, but his lectures were at first interdicted on account of their supposed materialistic tendency, and he removed to Göttingen. He returned to Berlin in 1827, and after the death of Hegel, whose philosophical views he opposed, he was appointed extraordinary professor of philosophy. His more important works are *Psychological Sketches*, *Text-book*

of Psychology as a Natural Science, System of Logic, Treatise on Education, Ground-work of a Physic of Ethics, written in direct antagonism to Kant's Metaphysic of Ethics, &c.

Beneven'to, a city of Southern Italy, the see of an archbishop, in a prov. of same name, on a hill between the rivers Sabato and Calore, occupying the site of the ancient Beneventum, and largely built of its ruins. Few cities have so many remains of antiquity, the most perfect being a magnificent triumphal arch of Trajan, built in 114. The cathedral is a building of the twelfth century in the Lombard-Saracenic style. Pop. 21,631. The prov. has an area of 680 sq. miles, and a pop. 1891, of 245,135.

Benev'olences, a means of raising money by forced loans or contributions, first adopted by Edward IV., and employed frequently down to the time of James I.

Benfey (ben'fi), THEODOR, German Sanskrit scholar, born 1809, died 1881; professor of Sanskrit and comparative philology at Göttingen. Among his works were a Sanskrit Chrestomathy, Vollständige Grammatik der Sanskritsprache, Practical Grammar of the Sanskrit Language, Sanskrit-English Dictionary, &c.

Bengal (ben-gal'), a presidency of British India which includes the whole of British India except what is under the governors of Madras and Bombay; area 490,000 square miles, pop. 142,440,000. But in this sense the term has no administrative meaning except as regards the army; and by the name Bengal is now usually understood the Lieutenant-governorship of Bengal, the largest in population, resources, and net revenue of the local governments of British India. It lies between 19° 18' and 28° 15' N. lat., and between 82° and 97° E. lon., and includes the provinces of Behar, Chutia Nagpur, Orissa, and Bengal proper, the last comprising the united deltas of the Ganges and Brahmaputra, and stretching north to Sikkim, west to Behar, east to Assam, and south to the Bay of Bengal. The lieutenant-governorship has an area of 151,543 sq. miles, and a pop., 1891, of 71,346,987. The feudatory states connected with it have an aggregate area of 35,834 sq. miles, and a pop. of 3,296,379.

As a whole Bengal consists of plains, there being few remarkable elevations, though it is surrounded with lofty mountains. It is intersected in all directions by rivers, mostly tributaries of its two great rivers the Ganges and Brahmaputra, which annually, in June

and July, inundate a large part of the region. These annual inundations render the soil extremely fertile, but in those tracts where this advantage is not enjoyed the soil is thin, seldom exceeding a few inches in depth. The *Sundarbans* or Sunderbunds (from being covered with the sunder tree), that portion of the country through which the numerous branches of the Ganges seek the sea, about 150 miles from E. to W. and about 160 from N. to S., is traversed in all directions by water-courses, and interspersed with numerous sheets of stagnant water. The country is subject to great extremes of heat, which, added to the humidity of its surface, renders it generally unhealthy to Europeans. The seasons are distinguished by the terms hot (March to June), rainy (June to October), and cold (the remainder of the year). The most unhealthy period is the latter part of the rainy season. The mean temperature of the whole year varies between 80° Fahr. in Orissa and 74° Fahr. in Assam, that of Calcutta being 79°. In the hill station of Darjeeling the mean is about 54°, occasionally falling as low as 24° in the winter. The heaviest rainfall occurs in Eastern Bengal, the annual average amounting to over 100 inches, an amount greatly exceeded in certain localities. Besides rice and other grains, which form along with fruits the principal food of the population, there may be noted among the agricultural products indigo, opium, cane-sugar, tobacco, betel, cotton, and the jute and sunn plants. Tea is now extensively grown in some places, notably in Darjeeling district and Chittagong. Cinchona is cultivated in Darjeeling and Sikkim. The forests cover 12,000 sq. miles, the principal forest trees being the sál on the Himalaya slopes, sál and teak in Orissa. Wild animals are most numerous in the Sundarbans and Orissa, snakes being remarkably abundant in the latter district. The principal minerals are coal, iron, and salt. Coal is worked at Raniganj, in Bardwán district, where the seams are about 8 feet in thickness, and iron in the district of Bír-bhúm, in the same division. Salt is obtained from the maritime districts of Orissa. The principal manufactures are cotton piece-goods of various descriptions, jute fabrics, blanketing, and silks. Muslins of the most beautiful and delicate texture were formerly made at Dacca, but the manufacture is almost extinct. Sericulture is carried on more largely in Bengal than in any other part of India, and silk weaving is a leading

industry in many of the districts. The commerce, both internal and external, is very large. From Calcutta goods to the value of over £30,000,000 are annually exported. The chief exports are opium, jute, indigo, oil-seeds, tea, hides and skins, and rice; the chief import is cotton piece-goods. The foreign trade is chiefly with Britain, China, the Straits Settlements, France, the United States, and Ceylon. Internal communication is rendered easy by a very complete railway and canal system, while the boat trade on the rivers is, for magnitude and variety, quite unique in India. The people of Bengal are mainly of Hindu race except in the valleys of Chittagong, where they are chiefly Burmese. Over 20,000,000 are Mohammedans in religion, more than double this profess Hinduism. The dialects spoken are Bengálí in Bengal proper, Hindí in Patna division, and Uriya in Orissa. The first rudiments of education are usually given in the primary schools that have been developed out of the native schools, and are now connected with government. There are also a number of secondary and superior schools established by government, including eight government colleges. The highest educational institution is the Calcutta University, the chief function of which is to examine and confer degrees. The population of Bengal beyond the capital, Calcutta, and its suburbs, is largely rural. There are altogether 33 towns with upwards of 20,000 inhabitants, and 200 with over 5000, but many of these towns are mere collections of rural hamlets in which all the operations of husbandry are carried on.

The first of the East India Company's settlements in Bengal were made early in the seventeenth century. The rise of Calcutta dates from the end of the same century. The greater part of Bengal came into the hands of the East India Company in consequence of Clive's victory at Plassy in 1757, and was formally ceded to the Company by the Nabob of Bengal in 1765. Chittagong had previously been ceded by the same prince, but its government under British administration was not organized till 1824. Orissa came into British hands in 1803. In 1858 the country passed to the crown, and since then the history of Bengal has been, on the whole, one of steady and peaceful progress.

Bengal, BAY OF, that portion of the Indian Ocean which lies between Hindustan and Farther India, or Burmah, Siam, and Malacca,

and may be regarded as extending south to Ceylon and Sumatra. It receives the Ganges, Brahmaputra, and Irrawadi. Calcutta, Rangoon, and Madras are the most important towns on or near its coasts.

Bengali, one of the vernacular languages of India, spoken by about 50,000,000 people in Bengal, akin to Sanskrit and written in characters that are evidently modified from the Devanâgari (Sanskrit). Its use as a literary language began in the fourteenth century with poetry. Large numbers of Bengali books are now published, as also newspapers. A large number of words are borrowed from Sanskrit literature.

Bengal Light, a kind of firework often used for signalling by night at sea, producing a steady vivid blue-coloured flame.

Ben-gazi (ben-gä'zē), a town of N. Africa, the capital of Barca, the most important seaport of the country, though the harbour admits only small vessels. Pop. 18,000.

Bengel (beng'l), JOHANN ALBRECHT, a German theologian, born in 1687, died in 1752. He rendered good service by his criticism of the text of the New Testament, and his *Gnomon Novi Testamenti* has passed through many editions, and is still of value.

Benguela (ben-gā'là), a district belonging to the Portuguese on the w. coast of South Africa; bounded n. by Angola, and s. by the Cunene river, which may be said to constitute also the uncertain eastern frontier; area, perhaps 150,000 sq. m. The country is mountainous in the interior, and thickly intersected by rivers and streams. Its vegetation is luxuriant, including every description of tropical produce, and animal life is equally abundant. Copper, silver, iron, salt, sulphur, petroleum, and other minerals are found. The natives are mostly rude and barbarous. Pop. estimated at 2,000,000. The capital, also called Benguela, or San Felipe de Benguela, is situated on the coast, on a bay of the Atlantic, in a charming but very unhealthy valley. It was founded by the Portuguese in 1617, and was formerly an important centre of the slave-trade, but has now only a spasmodic trade in ivory, wax, gum copal, &c. Pop. about 3000.

Beni (bā'nē), a river, South America, state of Bolivia. It rises in the eastern slopes of the Andes, and after a course of 900 miles joins the Mamore to form the Madeira, which flows into the Amazon near Serpa.

Benicarlo, a Spanish town on the Mediterranean, province of Castellon; the place of export of well-known red wines sent to Bordeaux to be mixed with clarets, or to England to be manufactured into port. Pop. 7922.

Beni-Hassan, a village of Middle Egypt, on the east bank of the Nile, remarkable for the grottoes or catacombs in the neighbourhood, supposed to have formed a necropolis for the chief families of a city, Hermopolis, on the opposite bank, and exhibiting interesting paintings, &c.

Beni-Israel, a race in the west of India (the Konkan sea-board, Bombay, &c) who keep a tradition of Jewish origin, and whose religion is a modified Judaism; supposed to be a remnant of the ten tribes.

Beni-Mzâb, a race or tribe of Berbers that dwell in the Sahara near its northern border and recognize the supremacy of the French. They number about 60,000, of whom 15,000 are in the town Ghardaya. They are of peaceful habits, and numbers of them are employed in Algiers in various occupations.

Benin', a negro kingdom of West Africa, on the Bight of Benin, extending along the coast on both sides of the Benin River, west of the lower Niger, and to some distance inland. The chief town is Benin (pop. 15,000), situated on the river Benin, one of the mouths of the Niger. The country, which gradually rises as it recedes from the coast, is well wooded and watered, and rich in vegetable productions. Cotton is indigenous, and woven into cloth by the women, and sugar-cane, rice, yams, &c., are grown. The religion is Fetichism, and human sacrifices are numerous. There is a considerable trade in palm-oil. The name Benin formerly extended over a much larger territory.

Benin, BIGHT OF, part of the Gulf of Guinea, W. Africa, which extends into the land between the mouth of the river Volta and that of the Nun.

Beni-Suef, the capital of a province of the same name in Middle Egypt, situated on the left bank of the Nile, and having the chief trade of the Faioum Valley. It has cotton-mills and alabaster quarries, and an important annual market. Pop. 5000 to 6000.

Benit'ier, or BENATU'RA, a stone font or vase for containing holy water, usually placed in a niche in the chief porch or entrance of a Roman Catholic church, some-

times in one of the pillars close to the door, into which the members of the congregation on entering dip the fingers of the right hand, and then cross themselves.

Benjamin. Same as *Benzoin*.

Benjamin, JUDAH P., "the brains of the Confederacy," born at St. Croix, W. I., 1811, died at Paris, 1884; studied law in New Orleans; elected U. S. Senator for Louisiana 1857; joined (1861) Secession as a member of their cabinet; in 1865 escaped to England; soon became famous as a lawyer there.

Benlo'mond, a mountain of Scotland in Stirlingshire, on the E. shore of Loch Lomond, rising to a height of 3192 feet and giving a magnificent prospect of the vale of Stirlingshire, the Lothians, the Clyde, Ayrshire, Isle of Man, hills of Antrim, &c.

Ben-Mac-Dhui, or PEN-MUICH-DHUI (-mik-dö'i), the second highest mountain in Scotland, situated in the south-west of Aberdeenshire, on the borders of Banffshire, forming one of a cluster of lofty mountains, among which are Brae-riach, Cairntoul, and Cairngorm. Height, 4296 feet.

Benne (ben'e) Oil, a valuable oil expressed from the seeds of *Sesānum orientāle* and *S. indicum*, much cultivated in India, Egypt, &c., and used for similar purposes with olive-oil. Also called *sesamum oil* and *gingelly oil*.

Bennet. See *Avens*.

Ben'nett, JAMES GORDON, an American journalist, born in Banffshire, Scotland, 1795, and educated at Aberdeen. He emigrated to Halifax, Nova Scotia, in 1819 as a teacher, and went thence to Boston as a proof-reader. In 1822 he went to New York, and, after being connected with various papers, started the New York Herald in 1835. By his enterprise and not very scrupulous conduct of the journal it speedily became an enormous success, its yearly profit at his death being estimated at from a half to three quarters of a million dollars. He died in 1872.

Bennett, JAMES GORDON, Jr., son of the above, born 1841; proprietor of *N. Y. Herald*; at his father's death projected Stanley's expedition to Africa in search of Livingstone—Jeanette polar expedition; associated with Mackay in Commercial Cable.

Bennett, WILLIAM STERNDALÉ, an English composer, born in 1816 at Sheffield, where his father was organist; became pupil of the Royal Academy in 1826, studying under Cipriani Potter, Crotch, and Lucas, and

afterwards Moscheles. By the advice of Mendelssohn, whose friendship he had gained, he studied in Leipsic from 1836 to 1838, and his performances and compositions were held in high esteem by the younger German musicians, and especially by Schumann. After a period spent in teaching, conducting, and composing, he was appointed professor of music at Cambridge in 1856, and he was knighted in 1871. He was too entirely dominated by Mendelssohn's influence to do great original work. He is best known by his overtures, the Naiads and Parisina; his cantatas, the May Queen and Woman of Samaria; and his little musical sketches, Lake, Millstream, and Fountain. He died in 1875.

Ben-Ne'vis, the most lofty mountain in Great Britain, in Inverness-shire, immediately E. of Fort-William and the opening of the Caledonian Canal, at the south-western extremity of Glenmore. It rises to the height of 4406 feet, and in clear weather yields a most extensive prospect. An observatory was established on its summit in May 1881, by the Scottish Meteorological Society.

Ben'nigsen, LEVIN AUGUSTUS COUNT VON, Russian commander-in-chief, born at Brunswick in 1745. After some years in the Hanoverian service he entered that of Russia, 1773, distinguished himself in Turkey and Poland, took part in the conspiracy against Paul I., and was made general by Alexander I. In the war with France, 1805-13, he played a most distinguished part, especially at the battles of Pultusk, Eylau, Borodino, Woronova, and Leipsic. He retired from the Russian service to his paternal estate in Hanover in 1818, and died 1826.

Ben'nington, a town in Vermont, United States, where, on the 16th of August, 1777, General Stark at the head of 1600 American militia was victorious over the British. Pop. 6391.

Ben-nut, the seed of *Moringa pterygo-sperma*, the ben tree of India, yielding the valuable oil of ben. See *Ben*, *Oil of*.

Benserade (ban-s-räd), ISAAC DE, a French poet at the court of Louis XIV., born 1612, died 1691. He wrote a paraphrase of Job, various tragedies and comedies, chiefly between 1635 and 1640, and a volume of rondeaux on Ovid's Metamorphoses, 1673. His minor poems are good specimens of the humour of the time.

Benshi'. See *Banshee*.

Bent-grass, a name applied to various wiry grasses such as grow on commons and neglected ground, including species of *Agrostis*, *Arundo arenaria*, *Triticum junceum*, &c.

Bentham (ben'tham), GEORGE, English botanist, nephew of Jeremy Bentham, born 1800, died 1884. He was privately educated, early attached himself to botany, and having resided in Southern France (where his father had an estate) in 1814-26 he published in French (1826) a work on The Plants of the Pyrenees and Lower Languedoc. Having returned to England he studied law, and on this subject, as well as logic, he developed original views. Finally, however, he devoted himself almost entirely to botany, was long connected with the Horticultural Society and the Linnæan Society, and from 1861 onwards was in almost daily attendance at Kew (except for a few weeks occasionally), working at descriptive botany from ten to four o'clock as a labour of love. Along with Sir J. D. Hooker he produced the great work of descriptive botany, *Genera Plantarum*; another great work of his was the *Flora Australiensis* (in 7 vols.). His *Handbook of the British Flora* is well known.

Bentham (ben'tham), JEREMY, a distinguished writer on politics and jurisprudence, born at London in 1749; educated at Westminster and Oxford; entered Lincoln's Inn, 1763. He was called to the bar, but did not practise, and, having private means, devoted himself to the reform of civil and criminal legislation. A criticism on a passage in Blackstone's Commentaries, published under the title *A Fragment on Government*, 1776, brought him into notice; and it was followed by a long list of works, of which the more important were: *The Hard Labour Bill*, 1778; *Principles of Morals and Legislation*, 1780; *A Defence of Usury*, 1787; *Introduction to the Principles of Morals and Legislation*, 1789; *Discourses on Civil and Penal Legislation*, 1802; *Treatise on Judicial Evidence*, 1813; *Paper relative to Codification and Public Instruction*, 1817; and the *Book of Fallacies*, 1824. His mind, though at once subtle and comprehensive, was characterized by something of the Coleridgean defect in respect of method and sense of proportion; and he is, therefore, seen at his best in works that underwent revision at the hands of his disciples. Of these M. Dumont, by his excellent French translations and rearrange-

ments, secured for Bentham at an early date a European reputation and influence, and his editions are still the most satisfactory. In England James Mill, Romilly, John Stuart Mill, Burton, and others of independent genius, have been among his exponents. In ethics he must be regarded as the founder of modern utilitarianism; in polity and criminal law he anticipated or suggested many practical reforms; and his whole influence was stimulating and humanizing. He was a man of primitive and genial manners, leading a quiet and unblemished life, in which perhaps the chief troubles were the refusal of his hand by Lord Holland's sister, Miss Caroline Fox, and the refusal of his ready-made codes of law by Russia, America, and Spain. He died in London, 6th June, 1832, leaving his body for dissection. His remains are to be seen at University College, London.

Bentinck', LORD WILLIAM CHARLES CAVENDISH, second son of the third Duke of Portland, born in 1774. He served in Flanders, in Italy under Suwaroff, and in Egypt; was governor of Madras 1803-5; and commanded a brigade at Corunna. In 1810 he was British plenipotentiary and commander-in-chief of the troops in Sicily; and in 1813 headed an expedition into Catalonia. In 1814 he endeavoured to stimulate a revolt against the French in Italy and took possession of Genoa. The same year he returned to England and entered Parliament. In 1827 he was sent to India as governor-general. Many wholesome measures marked his administration, which lasted till 1835, when he returned and became M.P. for Glasgow. He died in 1839.

Bentinck', LORD WILLIAM GEORGE FREDERICK CAVENDISH, son of the fourth Duke of Portland, born in 1802. He entered the army, but quitted it to become private secretary to Canning, and in 1827 entered Parliament. Up to 1846 he was a warm adherent of Sir Robert Peel; but in that year came forward as leader of the Protectionists in the House of Commons, abandoning the turf, in which he had long reigned supreme. With the assistance of Disraeli he maintained this position for two years, and though often illogical, and sometimes unscrupulous in his statements, he nevertheless commanded much attention by the vigour and earnestness of his oratory and deportment. He died in 1848.

Bent'ley, RICHARD, great English classical scholar and critic, born near Wakefield,

Yorkshire, in 1662. At the age of fourteen he entered St. John's College, Cambridge, where he took the degree of B.A. in 1680. In 1682 he became a master of Spalding School, and in the following year was appointed tutor to Dr. Stillingfleet's son. He lived in Dr. Stillingfleet's house during 1683-89, studying deeply, and accompanied his pupil to Oxford. In 1684 he took his M.A. degree at Cambridge, and in 1689 at Oxford, where two years later he won immediate reputation by the publication of his epistle to Mill on the Greek Chronicle of Malelas. Dr. Stillingfleet having been raised to the bishopric of Worcester made Bentley his chaplain, and in 1692 a prebendary in his cathedral. The same year he delivered the first series of the Boyle Lectures, his subject being a confutation of atheism. In 1694 he was appointed keeper of the royal library at St. James's Palace, and in 1696 came into residence there. Two or three years after began his famous controversy with the Hon. Charles Boyle, afterwards Earl of Orrery, relative to the genuineness of the Greek Epistles of Phalaris, an edition of which was published by Boyle, then a student at Christ Church, Oxford. In this dispute Bentley was completely victorious, though the greatest wits and critics of the age, including Pope, Swift, Garth, Atterbury, Aldrich, Dodwell, and Conyers Middleton came to Boyle's assistance. Bentley's Dissertation on the Epistles of Phalaris appeared in 1699—'a monument of controversial genius'—'a storehouse of exact and penetrating erudition.' In 1700 he was presented to the mastership of Trinity College, Cambridge, and from this period until 1738 he was at feud with the fellows of that college. A lawsuit, which lasted more than twenty years, was decided against him, but his opponents were unable to carry out the sentence depriving him of his mastership. In 1711 he published an edition of Horace, and in 1713 his remarks on Collins's Discourse on Free-thinking, by Phileleutherus Lipsiensis. He was appointed regius professor of divinity in 1716. In 1726 he published an edition of Terence and Phædrus. He meditated an edition of Homer, but left only notes. In Homeric criticism he has the merit of having detected the loss of the letter 'digamma' (which see) from the written texts. His last work was an edition of Milton's Paradise Lost, with conjectural emendations (1732). He died in 1742.

Benton, THOMAS HART, born in Orange

county, N. C., 1782, died at Washington, 1858; American Senator and lawyer; a most distinguished citizen.

Benué, or **BINUÉ** (ben'ū-ā, bin'ū-ā; 'mother of waters'), a river of Africa, the greatest tributary of the Niger, which it enters from the east about 250 miles above its mouth. Dr. Barth came upon the river in 1851, and its course was partly traced by Dr. W. Balfour Baikie, but its source was only reached (by Flegel) in 1883. This lies near the intersection of lat. 8° N. and lon. 14° E.

Benyowsky (ben-i-ov'ski), MAURICE AUGUSTUS, COUNT OF, born in Hungary 1741; served in the Seven Years' War; and in 1769 was made prisoner while fighting for the Polish Confederacy. Exiled to Kamtchatka, he gained the affections of the governor's daughter, who assisted him to escape with his companions in 1771. They visited Japan, Macao, &c., and then went to France. The French government having requested him to form a colony in Madagascar he sailed thither, and was made king in 1776 by the native chiefs. He broke with the French government, sought private aid in England and America, sailed again to Madagascar in 1785, and was killed fighting against the French in 1786. His memoirs were published in 1790.

Benzer'ta. See *Bizerta*.

Ben'zine (C₆H₆), a liquid hydrocarbon obtained from coal-tar and petroleum. It may also be got by distilling 1 part of crystallized benzoic acid intimately mixed with 3 parts of slaked lime. It is quite colourless, of a peculiar, ethereal, agreeable odour, is used by manufacturers of india-rubber and gutta-percha, on account of its great solvent powers, in the preparation of varnishes, and for cleaning gloves, removing grease-spots from woollen and other cloths, &c., on account of its dissolving fats and resins. It is highly inflammable.

Benzo'ic Acid (C₇H₆O₂), a vegetable acid obtained from benzoin and other resins and balsams, as those of Peru and Tolu. It forms light feathery needles; taste pungent and bitterish; odour slightly aromatic.

Benzoic Ether, a colourless oily liquid, with a feeble aromatic smell and a pungent aromatic taste, obtained by distilling together 4 parts alcohol, 2 of crystallized benzoic acid, and 1 of concentrated hydrochloric acid.

Ben'zoin (Ar. *luban jāwi*, 'Javanese incense'), a solid, brittle, vegetable substance,

the concrete resinous juice flowing from incisions in the stem or branches of the *Styrax Benzoin*, a tree 70 or 80 feet high, nat. order Styracaceæ. In commerce several varieties are distinguished, of which the yellow, the Siam, the amygdaloidal — the



Benzoin Tree (*Styrax Benzoin*).

last containing whitish tears of an almond shape—and Sumatra firsts are the finest. It is imported from Siam, Singapore, Bombay, and occasionally from Calcutta; it is found also in South America. The pure benzoin consists of two principal substances, viz. a resin, and an acid termed *benzoic* (which see). It has little taste, but its smell is fragrant when rubbed or heated, and it is used as incense in the Greek and Roman Catholic churches. It is insoluble in water, but soluble in alcohol, in which form it is used as a cosmetic and in pharmacy. Benzoin may be produced by the contact of alkalis with the commercial oil of bitter almonds. It is also known as benjamin, or gum benjamin.

Benzole (-zōl'). Same as *Benzine*.

Ben'zoline, a name of liquids of the same kind as benzine.

Be'owulf, an Anglo-Saxon epic, the only existing MS. of which belongs to the eighth or ninth century, and is in the Cottonian Library (British Museum). From internal evidence it is concluded that the poem in its essentials existed prior to the Anglo-Saxon colonization of Britain, and that it must be regarded either as brought to Britain by the Teutonic invaders, or as an early Anglo-Saxon translation of a Danish legend. From the allusions in it to Christianity, however, it must have received considerable modifications from its original form. It recounts the adventures of the hero Beowulf, espe-

cially his delivery of the Danish kingdom from the monster Grendel and his equally formidable mother, and, lastly, the slaughter by Beowulf of a fiery dragon, and his death from wounds received in the conflict. The character of the hero is attractive through its noble simplicity and disregard of self. The poem, which is the longest and most important in Anglo-Saxon literature, is in many points obscure, and the MS. is somewhat imperfect.

Béranger (bā-rān-zhā), **PIERRE JEAN DE**, French lyric poet, born in Paris 19th August, 1780, in the house of his grandfather, a tailor, in the Rue Montorgueil. His father was a restless and scheming man,



Béranger.

and young Béranger, after witnessing from the roof of his school the destruction of the Bastille, was placed under the charge of an aunt who kept a tavern at Peronne. At the age of fourteen he was apprenticed to a printer in Peronne, but was ultimately summoned to Paris to assist his father in his financing and plotting. After many hardships he withdrew in disgust from the atmosphere of chicanery and intrigue in which he found himself involved, betook himself to a garret, did what literary hack-work he could, and made many ambitious attempts in poetry and drama. Reduced to extremity, he applied in 1804 to Lucien Bonaparte for assistance, and succeeded in obtaining from him, first, a pension of 1000 francs, and five years later a university clerkship. Although as yet unprinted, many of his songs had become extremely popular, and in 1815 the first collection of them was published. A second collection, published in 1821, made him obnoxious to the Bourbon government, and in addition to being dis-

missed from his office in the university he was sentenced to three months' imprisonment and a fine of 500 francs. A third collection appeared in 1825, and in 1828 a fourth, which subjected him to a second state prosecution, an imprisonment of nine months, and a fine of 10,000 francs. In 1833 he published his fifth and last collection, thereafter remaining silent till his death. Shortly after the revolution of February, 1848, he was elected representative of the department of the Seine in the constituent assembly, but sent in his resignation in the month of May of same year. He died at Paris on July 16, 1857. From first to last he kept in sympathetic touch with the French people in all their humours, social and political, influencing men in the mass more than any lyric poet of modern times. In private life he was the most amiable and benevolent of men, living unobtrusively with his old friend Judith Frère, who died a few months before him.

Berar', otherwise known as the Hyderabad Assigned Districts, a province of India, in the Deccan, under the British resident at Haidarabad; area, 17,711 square miles, consisting chiefly of an elevated valley at the head of a chain of ghauts. It is watered by several affluents of the Godavari and by the Tapti, and has a fertile soil, producing some of the best cotton, millet, and wheat crops in India. The two principal towns of Berar are Amráoti (pop. 23,550) and Khamgaon (12,390). Coal and iron-ore are both found in the province, the pop. of which is 2,672,673. Exports, £3,456,348; imports, £2,100,903. Berar was assigned by the Nizam to the British government in 1853 in security of arrears due.

Berat', a fortified town of European Turkey, in Albania; residence of a pasha and a Greek archbishop. Pop. 12,000.

Berber, a town on the right bank of the Nile, about 20 miles below the confluence of the Atbara, an important station for merchants on the route from Sennaar and Khartoum to Cairo, and also from Suakim. Pop. 20,000.

Berbe'ra, a port and trading place on the Somali coast, East Africa, on a bay affording convenient anchorage, in the Gulf of Aden. It was taken possession of by the British along with a strip of adjacent territory in 1885; and there is now a small Indian force stationed here. A good deal of trade is carried on with Aden.

Ber'berin, a golden-yellow colouring matter obtained from several species of *Berberis* or barberry.

Ber'beris, a genus of plants, type of the nat. order Berberidaceæ or barberries. See *Barberry*.

Ber'bers, a people spread over nearly the whole of Northern Africa, from whom the name *Barbary* is derived. The chief branches into which the Berbers are divided are, first, the Amazirgh or Amazigh, of Northern Morocco, numbering from 2,000,000 to 2,500,000. They are for the most part quite independent of the Sultan of Morocco, and live partly under chieftains and hereditary princes and partly in small republican communities. Second, the Shuluh, Shillooh, or Shellakah, who number about 1,450,000, and inhabit the south of Morocco. They are more highly civilized than the Amazirgh. Third, the Kabyles in Algeria and Tunis, who are said to number 960,000 souls; and fourth, the Berbers of the Sahara, who inhabit the oases. Among the Sahara Berbers the most remarkable are the Beni-Mzâb and the Tuaregs. To these we may also add the Guanches of the Canary Islands, now extinct, but undoubtedly of the same race. The Berbers generally are about the middle height; their complexion is brown, and sometimes almost black, with brown and glossy hair. They are sparely built, but robust and graceful; the features approach the European type. Their language has affinities to the Semitic group, but Arabic is spoken along the coast. They are believed to represent the ancient Mauritians, Numidians, Gætulians, &c. The Berbers live in huts or houses, and practise various industries. Thus they smelt iron, copper, and lead, manufacture gun-barrels, implements of husbandry, &c., knives, swords, gunpowder, and a species of black soap. Some of the tribes breed mules, asses, and stock in considerable numbers, but many of the Berbers live by plunder.

Berbice (ber-bēs'), a district of British Guiana watered by the river Berbice, and containing the town of Berbice or New Amsterdam, which has three churches and several public buildings, pop. 6000.

Berchta (berh'tâ; i.e. Bertha), in the folk-lore of S. Germany, a sort of female hobgoblin of whom naughty children are much afraid. Her name is connected with the word *bright*, and originally she was regarded as a goddess of benign influence.

Berchtesgaden (berh'tes-gä-dên), a town, Upper Bavaria, on the Achen or Alben in a beautiful situation, with a royal palace and villa, an ancient church, &c. There are important salt-mines in the neighbourhood, and the people are also renowned for artistic carvings in wood. Pop. 1780.

Berdiansk', a seaport of Southern Russia, gov. of Taurida, on the north shore of the Sea of Azof, with an important export and inland trade. Pop. 12,465.

Ber'ditchef (Pol. *Berdyczew*), a city of European Russia, gov. of Kiev, with broad streets, well-built houses, numerous industrial establishments, and a very large trade, having largely-attended fairs. Pop. 52,787, chiefly Jews.

Bere'ans (or Barclayans, from their founder, Barclay), an insignificant sect of dissenters from the Church of Scotland, who profess to follow the ancient Bereans (see Acts xvii. 10-13) in building their faith and practice upon the Scriptures alone, without regard to any human authority whatever. They hold that the majority of professed Christians err in admitting the doctrine of a natural religion, natural conscience, &c., not founded upon revelation or derived from it by tradition; and they regard saving faith as attended by assurance.

Berenga'rius of Tours, born 998 at Tours, a teacher in the philosophical school in that city, and in 1040 archdeacon of Angers; renowned for his philosophical acuteness as one of the scholastic writers, and also for the boldness with which in 1050 he declared himself against the doctrine of transubstantiation, and for his consequent persecutions. He was several times compelled to recant, but always returned to the same opinions, until he was compelled in 1080 by the opposition of Lanfranc to retire to the Isle of St. Cosmas, near Tours, where he died in 1088. This Berengarius must not be confounded with Peter Berenger of Poitiers, who wrote a defence of his instructor Abelard.

Berenice (ber-e-nī'sē; 'bringer of victory'), the name of several distinguished women of antiquity; in particular the wife of Ptolemy Euergetes, King of Egypt. When her husband went to war in Syria she made a vow to devote her beautiful hair to the gods if he returned safe. She accordingly hung it in the temple of Venus, from which it disappeared, and was said to have been transferred to the skies as the constellation *Coma Berenices*. Also the wife of Mithridates the Great, king

of Pontus; put to death by her husband (about 71 B.C.) lest she should fall into the hands of *Lucullus*.

Berenice (ber-e-nī'sē), anciently a town on the Egyptian coast of the Red Sea, a place of great trade.

Ber'esford, WILLIAM CARR, VISCOUNT, a distinguished commander, a natural son of the first Marquis of Waterford; born 1768. He entered the army, lost an eye in Nova Scotia, served at Toulon, and in Corsica, the West Indies, and Egypt. In 1806, as brigadier-general, he commanded the land force in the expedition to Buenos Ayres; and in 1808 remodelled the Portuguese army, receiving in return the titles Marshal of Portugal, Duke of Elvas, and Marquis of Santo Campo. He was subsequently engaged at Badajoz, Salamanca, Vittoria, and Bayonne, and for his bravery at the battle of Toulouse was raised to the peerage with the title of Baron (Viscount, 1823) Beresford. He died in 1854.

Beret'ta. See *Biretta*.

Berez'ina, a tributary of the Dnieper, in the Russian province of Minsk, rendered famous by the disastrous passage of the French army under Napoleon during the retreat from Moscow, Nov. 27-29, 1812.

Berezoff', a town in Western Siberia, government of Tobolsk, on a branch of the Obi, the entrepôt of a large fur and skin district. Pop., chiefly Cossack, 1900.

Berg, an ancient duchy of Germany, on the Rhine. After it had been long consolidated with the Prussian dominions Napoleon revived the title, and conferred it, with an enlarged territory, on Murat (1806), and afterwards on his nephew Louis Napoleon. At the Congress of Vienna, in 1815, the whole was given to Prussia, and it is now included in governments Arnsberg, Cologne, and Düsseldorf.

Ber'gama (ancient, *Pergamos*), town, Turkey in Asia, north of Smyrna; contains fine ruins of a Roman palace, &c. Pop. about 10,000.

Ber'gamo, a town of North Italy, capital of the province of Bergamo (1028 sq. miles, 390,775 inhabitants), consists of two parts, the old town situated on hills and having quite an ancient appearance, and the new town almost detached and on the plain. It has a cathedral, an interesting church of the 12th century, a school of art, picture-gallery, &c. It trades largely in silk, silk goods, corn, &c., has the largest annual fair in N. Italy, and extensive manufactures. The

comic characters in the Italian masked comedy are Bergamese, or affect the Bergamese dialect. Pop. 23,819.

Ber'gamot, a fruit-tree, a variety or species of the genus *Citrus*, variously classed with the orange, *Citrus Aurantium*, the lime, *Citrus Limetta*, or made a distinct species as *Citrus Bergamia*. It is probably of eastern origin though now grown in S. Europe, and bears a pale-yellow pear-shaped fruit with a fragrant and slightly acid pulp. Its essential oil is in high esteem as a perfume.—*Bergamot* is also a name given to a number of different pears.

Ber'gedorf, a town and district in the territory of Hamburg. Pop. 14,849.

Bergen (ber'gen), a seaport on the w. coast of Norway, the second town of the kingdom, about 25 miles from the open sea, on a bay of the Byfiord, which forms a safe harbour, shut in by hills which encircle the town on the land side, and promote perpetual rains. The town is well built, but has many narrow streets, and houses mostly of wood; with cathedral, museum, &c. The trade is large, timber, tar, train-oil, cod-liver oil, hides, and particularly dried fish (stock-fish) being exported in return for corn, wine, brandy, coffee, cotton, woollens, and sugar. In 1445 a factory was established here by the Hanseatic cities of Germany. Pop. 1891, 53,684.

Bergen-op-zoom (ber'gen - op - zōm), a town, Holland, in a marshy situation on the Scheldt, 20 miles N.N.W. of Antwerp. It was formerly of great strength, both from the morasses surrounding it and from its fortifications, and successfully resisted the attacks of the Duke of Parma in 1581 and 1588, and of Spinola in 1622, but was taken by the French in 1747 and 1794, and unsuccessfully attempted by the British in 1814. Pop. 9139.

Bergerac (bārzh - rāk), town, France, department of the Dordogne. It has iron-works, manufactures paper, hosiery, earthenware, liqueurs, &c., and gives its name to the wine of the Dordogne district, sometimes termed in France *petit champagne*. Pop. 15,042.

Bergh, HENRY, humanitarian, was born in New York in 1823. Becoming interested in the treatment of domestic animals he succeeded, in 1866, in having incorporated the American Society for the Prevention of Cruelty to Animals. The report for the first year showed 101 prosecutions--beating horses with clubs, whips, &c.; con-

veying animals in a cruel and inhuman manner; cruelty to cattle, dogs, cats, poultry, &c. The humane work begun by Mr. Bergh soon enlisted the sympathies of women, and among his ablest assistants and most generous donors are ladies moving in the highest social circles in New York and elsewhere.

Berghaus (berh'hous), HEINRICH, German geographer, born 1797, died 1884. He

served in 1815 in the German army in France, and was from 1816 to 1821 employed in trigonometrical survey of Prussia under the war department. From 1824 to 1855 he was professor of applied mathematics in the Berlin Academy of Architecture. Besides his various maps and his Great Physical Atlas, he published *Allgemeine Länder-und-Völkerkunde* (6 vols.), 1837-41; *Die Völker des Erdballs* (2 vols.), 1852;



Bergen, from the N.W.

Grundlinien der physikalischen Erdbeschreibung, 1856; *Grundlinien der Ethnographie*, 1856; *Deutschland seit hundert Jahren* (5 vols.), 1859-62; *Was man von der Erde Weiss* (4 vols.), 1856-60; *Sprachschatz der Sassen*, or Low German dictionary (left incomplete), &c.

Berghem (berh'hem), NICHOLAS, painter, born at Harlem in 1624, pupil of his father, Peter Klaas, and also of Van Goyen and the elder Weenix. He produced a large number of works, chiefly landscapes with cattle, of which eleven are in the Louvre, eighteen at St. Petersburg, &c. He died at Harlem, 1683. Dujardin was among his pupils.

Bergk (berk), THEODOR, German classical scholar, born 1812, died 1881. He was successively professor at Marburg, Freiburg, and Halle, and latterly resided at Bonn. He rendered most service in the criticism and explanation of Greek lyric poetry.

Bergman (berh'män), TORBERN OLOF, a Swedish physicist and chemist, born 1735, died in 1784. He studied under Linnæus at Upsala; in 1758 became Doctor of Philosophy and professor of physics there; and in 1767 became professor of chemistry. He succeeded in the preparation of artificial mineral waters, discovered the sulphuretted hydrogen gas of mineral springs, and published a classification of minerals on the basis of their chemical character and crystalline forms. His theory of chemical affinities greatly influenced the subsequent development of chemistry.

Bergmehl (bèrg'māl), mountain-meal or fossil farina, a geological deposit (fresh-water) in the form of an extremely fine powder, consisting almost entirely of the siliceous frustules or cell-walls of diatoms. It has been eaten in Lapland in seasons of great scarcity, mixed with ground corn and bark. It is a variety of diatomite (which see).

Bergues (bārg), a fortified town, France, dep. Nord, in a marshy district 5 miles s. of Dunkirk; formerly a place of much more importance, with a large monastery (St. Winoc). It has an interesting belfry tower of the sixteenth century. Pop. 5738.

Ber'gylt (*Sebastes norvegicus*), a fish of the northern seas, belonging to the gurnard family, but resembling a perch, and of a beautiful reddish colour, sometimes found on the British coasts, and called Norway haddock and Norway carp.

Berhampur, the name of two Indian towns: 1. A town and military station in the north-east portion of Madras Presidency, the head-quarters of Ganjām district, with a trade in sugar and manufactures of silks. Pop. 23,599.—2. A municipal town and the administrative head-quarters of Murshidábád district, Bengal; formerly a military station, and having still large barracks. It was the scene of the first overt act of mutiny in 1857. Pop. 23,605.

Ber'iberi, a disease endemic in parts of India, Ceylon, &c., characterized by paralysis, numbness, difficult breathing, and often other symptoms, attacking strangers as well as natives, and generally fatal.

Be'ring. See *Behring*.

Berkeley, Alameda co., Cal., a flourishing town, seat of State University and Agricultural College; also State institution for deaf, dumb and blind. Pop. 1890, 5101.

Berkeley (bérk'li), DR. GEORGE, Bishop of Cloyne in Ireland, celebrated for his ideal theory. He was born in Ireland in 1685 (his father being an officer of customs); became fellow of Trinity College, Dublin, in 1707; went to England in 1713; travelled on the Continent in 1714, and again in 1716–20. In 1721 he was appointed chaplain to the Lord-lieutenant of Ireland, the Duke of Grafton. By a legacy from Miss Vanhomrigh (Swift's Vanessa) in 1723 his fortune was considerably increased. In 1724 he became Dean of Derry. He now published his Proposals for the Conversion of the American savages to Christianity by the establishment of a College in the Bermuda Islands; and subscriptions having been raised, he set sail for Rhode Island in 1728, proposing to wait there till a promised grant of £20,000 had been got from government. The scheme never got a start, however, and he returned, now receiving the bishopric of Cloyne. He died suddenly at Oxford in 1753. Berkeley holds an important place in the history of philosophy. He maintains that the belief

in the existence of an exterior material world is false and inconsistent with itself; that those things which are called *sensible material objects* are not external but exist in the mind, and are merely impressions made on our minds by the immediate act of God, according to certain rules termed *laws of nature*, from which he never deviates; and that the steady adherence of the Supreme Spirit to these rules is what constitutes the reality of things to his creatures, and so effectually distinguishes the ideas perceived by sense from such as are the work of the mind itself or of dreams, that there is no more danger of confounding them together on this hypothesis than on that of the existence of matter. Berkeley was admirable as a writer; as a man he was said by his friend Pope to be possessed of 'every virtue under heaven.' His most celebrated philosophical works are: *Essay towards a new Theory of Vision*, 1709; a *Treatise on the Principles of Human Knowledge*, 1710, in which his philosophical theory is fully set forth; *Three Dialogues between Hylas and Philonous*, 1713; *Alciphron*, or the *Minute Philosopher*, 1732; and *Siris, Philosophical Reflections and Inquiries concerning the Virtues of Tar-water*, 1744. There were others of a mathematical and theological order, the only complete edition being that of Fraser, 3 vols. 1871.

Berkeley, GEORGE CHARLES GRANTLEY FITZHARDINGE, sixth son of the fifth Earl of Berkeley, but second son after the legally recognized marriage; born 1800. From 1832–52 he was Liberal member for West Gloucestershire. He became notorious in 1836 for his assault upon Fraser, the publisher, and his duel with Maginn for a hostile review in Fraser's Magazine of his first novel, *Berkeley Castle*. Besides other stories, poems, and works upon travel, sport, &c., he published in 1865–66 his *Life and Recollections* in 4 vols., and in 1867 a volume of reminiscences entitled *Anecdotes of the Upper Ten Thousand*—both of which gave rise to much discussion. He died in 1881.

Berk'hampstead, GREAT, a town in England, Hertfordshire, with manufactures of straw-plait and wooden ware. Birthplace of Cowper. Pop. 4485.

Berkshire, or BERKS, a county of England, between Oxfordshire, Buckinghamshire, Surrey, Hampshire, and Wilts; area 462,210 acres, of which eight-ninths are cultivated or under timber. A range of chalk

BERLAD — BERLIN.

hills, entering from Oxfordshire, crosses Berkshire in a westerly direction. The western and central parts are the most productive in the county, which contains rich pasturage and excellent dairy farms, and is especially suited for barley and wheat crops. The Thames skirts the county on the north, and connects the towns of Abingdon, Wallingford, Reading, Henley, Maidenhead, and Windsor with the metropolis.

Few manufactures are carried on, the principal being agricultural implements and artificial manures, flour, paper, sacking and sail-cloth, and biscuits (at Reading). Malt is made in great quantities. The minerals are unimportant. Berkshire returns three members to the House of Commons, the county divisions being Abingdon, Newbury, and Wokingham. Pop. 1891, 238,446.

Ber'lad, a town of Roumania, on the Ber-



Berlin—Royal Theatre and New Church in the Gensdarmenmarkt.

lad, a navigable tributary of the Sereth. Pop. 28,000.

Berlen'gas, a group of rocky islands, about twelve in number, off the coast of Portugal.

Berlichingen (ber'li-hing-ën), Götz or GODFREY VON, with the Iron Hand; born at Jaxthausen, in Suabia, in 1480. He took part in various quarrels among the German princes; and having lost his right hand at the siege of Landshut, wore thereafter one made of iron. In constant feud with his baronial neighbours, and even with free cities like Nuremberg, he at last headed the insurgents in the Peasants' War of 1525, and suffered imprisonment on their defeat. After the dissolution of the Suabian League he again fought against the Turks (1541) and the French (1544). He died in 1562. His autobiography, printed at Nuremberg

in 1731, furnished Goethe with the subject for his drama, *Goetz von Berlichingen*.

Berlin', the largest town in Germany; capital of the Prussian dominions and of the German Empire, in the province of Brandenburg, on a dreary sandy plain on both sides of the Spree, a sluggish stream, here about 200 feet broad. It has water communication to the North Sea by the Spree, which flows into the Havel, a tributary of the Elbe, and to the Baltic by canals connecting with the Oder. The original portion of the city lies on the right bank of the river, and is irregularly built. The more modern portion is regular in its plan, and the streets are lined with lofty and well-built edifices mostly of white freestone, or brick covered with a coating of plaster or cement. The drainage is very defective. Of the numerous bridges, the finest is the

Castle (Schloss) Bridge, 104 feet wide, and having eight piers surmounted by colossal groups of sculpture in marble. The principal and most frequented street, Unter den Linden ('under the lime-trees'), is about two-thirds of a mile in length and 160 feet wide, the centre being occupied by a double avenue of lime-trees. At the E. end of this street, and round the Lustgarten, a square with which it is connected by the Schloss Bridge, are clustered the principal public buildings of the city, such as the royal palace, the palace of the crown-prince, the arsenal, the university, the museums, royal academy, &c.; while at the W. end is the Brandenburg Gate, regarded as one of the finest portals in existence. Immediately beyond this gate is the Thiergarten (zoological garden), an extensive and well-wooded park containing the palace of Bellevue and places of public amusement. There are also several other public parks. The principal public buildings are the royal palace or Schloss, a vast rectangular pile, the museum (opposite the Schloss), a fine Grecian building, with an extensive collection of sculpture and painting; the royal theatre is also a fine Grecian edifice. The royal library and palace of the emperor are united; the former contains above 900,000 volumes and 15,500 manuscripts and charts. The arsenal (Zeughaus), besides arms and artillery, contains flags and other trophies of great antiquity. The university, the exchange, the Italian opera-house, the principal Jewish synagogue, the town-hall, and the old architectural academy are all beautiful structures. The town contains altogether about twenty-five theatres, thirty hospitals, sixteen barracks, ten or twelve cemeteries, &c. The prevailing style of the newer buildings, both public and private, is Grecian, pure or Italianized. One of the most remarkable of modern monuments is that erected in 1851 to Frederick the Great in the Unter den Linden—the *chef d'œuvre* of Rauch and his pupils. The literary institutions of the city are numerous and excellent; they include the university, having an educational staff of nearly 260 professors and teachers, and attended by over 4000 students, exclusive of 1200 to 1400 who do not matriculate; the academy of sciences; the academy of fine arts; and the technical high school or academy of architecture and industry (occupying a large new building in the suburb of Charlottenburg). The manufactures are various and extensive, including steam-en-

gines and other machinery, brass-founding and various articles of metal, sewing-machines, paper, cigars, pottery and porcelain, pianos and harmoniums, artificial flowers, &c. In the royal iron-foundry busts, statues, bass-reliefs, &c., are cast, together with a great variety of ornaments of unrivalled delicacy of workmanship. The oldest parts of the city were originally poor villages, and first rose to some importance under Markgraf Albert (1206–20), yet about two centuries ago Berlin was still a place of little consequence, the first important improvement being made by the great Elector Frederick William, who planted the Unter den Linden, and in whose time it already numbered 20,000 inhabitants. Under his successors Frederick I. and Frederick the Great the city was rapidly enlarged and improved, the population increasing fivefold in the hundred years preceding the death of Frederick the Great and tenfold in the century succeeding it. Pop. in Dec., 1875, 966,872; in Dec., 1885, 1,315,297; in Dec., 1890, 1,579,244.

TREATY OF BERLIN, the treaty, signed 13th July, 1878, at the close of the Berlin Congress, which was constituted by the representatives of the six great powers and Turkey. The treaty of San Stefano previously concluded between Turkey and Russia was modified by the Berlin treaty, which resulted in the division of Bulgaria into two parts, Bulgaria proper and Eastern Rumania, the cession of parts of Armenia to Russia and Persia, the independence of Roumania, Servia, and Montenegro, the transference of Bosnia and Herzegovina to Austrian administration, and the retrocession of Bessarabia to Russia. Greece was also to have an accession of territory. The British representatives were Beaconsfield, Salisbury, and Lord Odo Russell. By a separate arrangement previously made between Britain and Turkey the former got Cyprus to administer.

Berlin', a four-wheeled carriage consisting of an inclosed fore-portion for two occupants, and a back seat with a calash top for servants; invented in Berlin.

Berlin', a town of Canada, prov. Ontario, about 60 miles W.S.W. of Toronto, with some manufactures. Pop. 1891, 7425.

Berlin Blue. See *Blue*.

Berlin Spirit, a coarse spirit distilled from potatoes, beet, &c.

Berlioz (ber-li-os), **HECTOR**, a French composer, born in 1803. He forsook medicine to study music at the Paris Con-

servatoire, where he gained the first prize in 1830 with his cantata *Sardanapale*. For about two years he studied in Italy, and when on his return he began to produce his larger works, he found himself compelled to take up the pen both in defence of his principles and for his own better maintenance. As critic of the *Journal des Debats* and feuilletonist he displayed scarcely less originality than in his music, his chief literary works being the *Traité d'Instrumentation*, 1844; *Voyage Musical*, 1845; *Les Soirées d'Orchestre*, 1853; and *A travers Chant*, 1862. His musical works belong to the Romantic school, and are specially noteworthy for the resource they display in orchestral colouring. The more important are *Harold en Italie*; *Episode de la Vie d'un Artiste*, and *Le Retour à la Vie*; *Romeo and Juliette*, 1834; *Damnation de Faust*, 1846; the operas *Benvenuto Cellini*, *Beatrice and Benedict*, and *Les Troyens*; *L'Enfance du Christ*, and the *Requiem*. He married an English actress, Miss Smithson, but latterly lived apart from her. He died in 1869. After his death appeared *Mémoires* written by himself.

Berm, in fortification, a level space a few feet wide between outside slope of a rampart and the scarp of the ditch.

Ber'mondsey, a parl. division of London, on the Surrey side of the Thames, between Southwark and Rotherhithe. Large tan-yards and wharfs. Pop. 86,602.

Bermu'da Grass, *Cynodon dactylon*, a grass cultivated in the West Indies, United States, &c., a valuable fodder grass in warm climates.

Bermu'das, or **SOMERS ISLANDS**, a cluster of small islands in the Atlantic Ocean belonging to Britain, and numbering about 400 set within a space of about 20 miles long and 6 wide; area 20 square miles or 12,000 acres; 18 or 20 only inhabited. They were first discovered by Juan Bermudez, a Spaniard, in 1522; in 1609 Sir George Somers, an Englishman, was wrecked here, and, after his shipwreck, formed the first settlement. The most considerable are St. George, Bermuda or Long Island (with the chief town Hamilton, the seat of the governor), Somerset, St. David's, and Ireland. They form an important British naval and military station. An immense iron floating-dock, capable of receiving a vessel of 3000 tons, was towed from London to the Bermudas in 1868. The climate is generally healthy and delightful,

but they have been sometimes visited by yellow fever. Numbers of persons from the U. States and Canada now pass the colder months of the year in these islands. About 4000 acres are cultivated. The soil, though light, is in general rich and fertile; there is, however, little fresh water except rain-water, preserved in cisterns. The inhabitants cultivate and export potatoes, arrow-root, onions, bananas, tomatoes, &c. Oranges and other fruits are also cultivated. The value of the total exports in 1891 was £129,803; imports, £325,976. The military stationed here usually number about 1500. Pop. 1891, 16,000.

Bern, a town in Switzerland, capital of the canton Bern, and, since 1848, of the whole Swiss Confederation, stands on the declivity of a hill washed on three sides by the Aar. The principal street is wide and adorned with arcades and curious fountains; the houses generally are substantially built of stone. Among the public buildings are the great Gothic cathedral, built between 1421 and 1502; the Church of the Holy Spirit; the federal-council buildings (or parliament house), commanding a splendid view of the Alps; the university; the town-house, a Gothic edifice of the fifteenth century; the mint; &c. Bern has an academy and several literary societies, and an excellent public library. Trade and commerce lively; manufactures: woollens, linens, silk stuffs, stockings, watches, clocks, toys, &c. Few cities have finer promenades, and the environs are very picturesque. Bern became a free city of the empire in 1218. In 1353 it entered the Swiss Confederacy. Pop. 47,793.—The canton of Bern has an area of 2660 square miles. The northern part belongs to the Jura mountain system, the southern to the Alps; between these being an elevated undulating region where is situated the Emmenthal, one of the richest and most fertile valleys in Switzerland. The southern part of the canton forms the Bernese Oberland (Upperland). The lower valleys here are fertile and agreeable; higher up are excellent Alpine pastures; and above them rise the highest mountains of Switzerland (Finsteraarhorn, Schreckhorn, Wetterhorn, Eiger, and Jungfrau). The canton is drained by the Aar and its tributaries; the chief lakes are those of Brienz, Thun, and Bienne. Of the surface over 58 per cent is under cultivation or pasture. Agriculture and cattle-rearing are the chief occupations; manufactures embrace

nen, cotton, silk, iron, watches, glass, pottery, &c. Bienne and Thun are the chief towns after Bern. Pop. 532,164, 87 per cent being Protestants, and nearly as many German-speaking.

Bernadotte (ber-nä-dot), JEAN-BAPTISTE-JULES, a French general, afterwards raised to the Swedish throne, was the son of an advocate of Pau; born in 1764. He enlisted at seventeen, became sergeant-major in 1789, and subaltern in 1790. In 1794 he was appointed a general of division, and distinguished himself greatly in the campaign in Germany, and on the Rhine. In 1798 he married Mademoiselle Clary, sister-in-law of Joseph Bonaparte. The following year he became for a short time minister of war, and on the establishment of the empire was raised to the dignity of marshal of France, and the title of Prince of Ponte-Corvo. On the death of the Prince of Holstein-Augustenburg the heir apparent to the Swedish crown was offered to the Prince of Ponte-Corvo, who accepted with the consent of the emperor, went to Sweden, abjured Catholicism, and took the title of Prince Charles John. In the maintenance of the interests of Sweden a serious rupture occurred between him and Bonaparte, followed by his accession in 1812 to the coalition of sovereigns against Napoleon. At the battle of Leipzig he contributed effectually to the victory of the allies. At the close of the war strenuous attempts were made by the Emperor of Austria and other sovereigns to restore the family of Gustavus IV. to the crown; but Bernadotte, retaining his position as crown-prince, became King of Sweden on the death of Charles XIII. in 1818, under the title of Charles XIV. During his reign agriculture and commerce made great advances, and many important public works were completed. He died 8th March, 1844, and was succeeded by his son Oscar.

Bernard (ber-när), CHARLES DE, a French novelist of the school of Balzac, born in 1804, died in 1850. His best works were: *Le Gerfaut*, 1838; *Ailes d'Icare*, 1839; *La Peau du Lion*, 1841; *L'Homme Sérieux*, and *Le Gentilhomme Campagnard*, 1847. Many of his earlier works, however, are also widely known, especially the *Femme de quarante ans* and the *Nœud Gordien*. He also wrote poems and dramatic pieces.

Bernard (ber-när), CLAUDE, French physiologist, born 1813; studied at Paris; held in succession chairs of physiology in the

Faculty of Sciences, the College of France, and the Museum, and died at Paris 1878. Amongst his many works may be cited his *Researches on the Functions of the Pancreas*, 1849; on the Sympathetic System, 1852; *Experimental Physiology in its Relation to Medicine*, 1855-56; *On the Physiological Properties and Pathological Alterations of the various Liquids of the Organism*, 1859; and his *Nutrition and Development*, 1860.

Ber'nard, GREAT ST., a celebrated Alpine pass in Switzerland, canton Valais, on the mountain-road leading from Martigny in Switzerland to Aosta in Piedmont, and rising to a height of 8150 feet. On the E. side of the pass is Mount Velan, and on the W. the Pointe de Dronaz. Almost on the very crest of the pass, near a small lake on which ice sometimes remains throughout the year, is the famous Hospice, next to Etna Observatory the highest inhabited spot in Europe. It is a massive stone building, capable of accommodating seventy or eighty travellers with beds, and of sheltering 300, and is tenanted by ten or fifteen brethren of the order of St. Augustine, who have devoted themselves by vow to the aid of travellers crossing the mountains. The institution is chiefly supported by subscriptions and donations. The severest cold recorded is 29° below zero Fah., but it has often been 18° and 20° below zero; and few of the monks survive the period of their vow. The dogs kept at St. Bernard, to assist the brethren in their humane labours, are well known. The true St. Bernard dog was a variety by itself, but this is now extinct, though there are still descendants of the last St. Bernard crossed with a Swiss shepherd's dog. The colour of these is yellowish, or white with yellow-gray or brown spots; head large and broad, muzzle short, lips somewhat pendulous, hanging ears. A pagan temple formerly stood on the pass, and classic remains are found in the vicinity. The hospice was founded in 962 by St. Bernard of Menthon, an Italian ecclesiastic, for the benefit of pilgrims to Rome. In May, 1800, Napoleon led an army of 30,000 men, with its artillery and cavalry, into Italy by this pass.

Bernard, LITTLE ST., a mountain, Italy, belonging to the Graian Alps, about 10 miles S. of Mont Blanc. The pass across it, one of the easiest in the Alps, is supposed to be that which Hannibal used. Elevation of Hospice, 7192 feet.

Bernard (ber-när), PIERRE JOSEPH, a French poet, to whom Voltaire gave the name Gentil-Bernard; born 1710. He was for some time the pet poet of the salons and of Madame de Pompadour's 'petits soupers,' reading there translations from Ovid's *Art of Love* and his own essays in erotic poetry. He was the librettist of Rameau's *Castor and Pollux*. Died 1775.

Ber'nard, SAINT, of Clairvaux, one of the most influential ecclesiastics of the middle ages, born at Fontaines, Burgundy. 1091, of a noble family. In 1113 he became a monk at Cîteaux; in 1115 first abbot of Clairvaux, the great Cistercian monastery near Langres. His austerities, tact, courage, and eloquence speedily gave him a wide reputation; and when, on the death of Honorius III. (1130), two popes, Innocent and Anaclete, were elected, the judgment of Bernard in favour of the former was accepted by nearly all Europe. In 1140 he secured the condemnation of Abelard for heresy; and after the election of his pupil, Eugenius III., to the papal chair, he may be said to have exercised supreme power in the church. After the capture of Edessa by the Turks he was induced to preach a new crusade, which he did (1146) with disastrous effectiveness, the large host raised by him being destroyed. He died Aug. 20, 1153. Seventy-two monasteries owed their foundation or enlargement to him; and he left no fewer than 440 epistles, 340 sermons, and 12 theological and moral treatises. He was canonized in 1174.

Bernard de Ventadour, a troubadour of the twelfth century. The son of a domestic servant he was detected in an amour with the wife of his master, the Comte de Ventadour, and took refuge at the court of Raymond V., Comte de Toulouse. His songs, which were praised by Petrarch, are yet highly esteemed.

Ber'nardine Monks, a name given in France to the Cistercians, after St. Bernard. See *Cistercians*.

Bernar'do del Carpio, a half legendary Spanish hero of the ninth century, son of Ximena, sister of Alphonso the Claste, by Don Sancho of Saldagua. Alphonso put out the eyes of Don Sancho and imprisoned him, but spared Bernardo, who distinguished himself in the Moorish wars, and finally succeeded in obtaining from Alphonso the Great the promise that his father should be given up to him. At the appointed time his father's corpse was sent to him, and Ber-

nardo in disgust quitted Spain for France, where he spent the remainder of his life as a knight-errant.

Bernard of Morlaix, a monk of the abbey of Cluny under Peter the Venerable (1122-56). He wrote a Latin poem on *Contempt of the World* in about 3000 leonine dactyllic verses, from which are taken the popular hymns, *Jerusalem the Golden*, *Brief Life is here our Portion*, &c.

Bernard of Treviso, a noted Italian alchemist, born at Padua 1406, died 1490. Most important work, *Tractatus de secretissimo philosophorum opere chemico*, 1600.

Bernauer (ber'nou-ër), AGNES, the daughter of a poor Augsburg (or Biberach) citizen, whom Duke Albert of Bavaria, only son of the reigning prince, secretly married. He conducted her to his own castle of Vohburg; but his father wishing to marry him to Anne, daughter of the Duke of Brunswick, he was compelled to proclaim his marriage with Agnes, giving her for residence the castle of Straubing on the Danube. The incensed Duke of Bavaria, however, caused her to be seized in her castle during the absence of his son, accused her of sorcery, and had her flung bound into the Danube. Albert in revenge took arms against his father, but the Emperor Sigismund finally reconciled them. The Duke Ernest raised a chapel to the memory of Agnes, and Albert married the Princess of Brunswick.

Bernay (ber-nā), a town, France, dep. of Eure, on the Charentonne, with some manufactures and a horse-fair, held in the fifth week in Lent, one of the largest in France. Pop. 7510.

Bernburg (bern'burh), a town, Germany, duchy of Anhalt, on both sides of the Saale, divided into the old, the new, and the high town; the first two communicating by a bridge with the latter. It contains an oil-mill, breweries, distilleries; and manufactures paper, earthenware, copper and tin wares, &c. Pop. 18,593.

Berne. See *Bern*.

Ber'ners, JOHN BOURCHIER, LORD, an English baron, a descendant of the Duke of Gloucester, youngest son of Edward III.; born 1474; member of Parliament 1495-1529; aided in suppressing Cornish insurrection, 1497; chancellor of exchequer, 1515; ambassador to Spain, 1518; for many years governor of Calais; died 1532. He translated Froissart's *Chronicles*, 1523-25, and other works, his translation of the former being a sort of English classic.

Ber'ners, or BARNES, JULIANA, LADY, an English writer of the fifteenth century, of whom little more is known than that she was prioress of the nunnery of Sopewell, near St. Alban's. The book attributed to her is entitled in the edition of Wynkyn de Worde (1496), *Treatyse perteynyng to Hawkyng, Huntynge and Fysshynge with an angle*; also a right noble *Treatyse on the Lygnage of Cot Armours*, &c. The treatises on fishing and on coat-armour did not appear in the first St. Alban's edition of 1481. It was for a long time the popular sporting manual.

Bernese Alps, the portion of the Alps which forms the northern side of the Rhone Valley, and extends from the Lake of Geneva to that of Brienz, comprising the Finsteraarhorn, Schreckhorn, Jungfrau, Monk, &c.

Bernhard (bern'härt), Duke of Weimar, general in the Thirty Years' war, born 1604, the fourth son of Duke John of Saxe-Weimar, entered the service of Holland, and afterwards the Danish army employed in Holstein. He then joined Gustavus Adolphus, and in the battle of Lützen, 1632, commanded the victorious left wing of the Swedish army. In 1633 he took Bamberg and other places, was made Duke of Franconia, and after the alliance of France with Sweden raised an army on the Rhine to act against Austria. After many brilliant exploits he captured Breisach and other places of inferior importance, but showed no disposition to hand them over to the French, who began to find their ally undesirably formidable. He rejected a proposal that he should marry Richelieu's niece, the Duchess d'Aiguillon, seeking instead the hand of the Princess of Rohan. This the French court refused lest the party of the Huguenots should become too powerful. He died somewhat suddenly in 1639 at Neuberg, the common opinion being that he was poisoned by Richelieu.

Bernhardt (ber-när), ROSINE SARA, a French actress, born at Paris 1844. Of Jewish descent, her father French, her mother Dutch, her early life was spent largely in Amsterdam. In 1858 she entered the Paris Conservatoire and gained prizes for tragedy and comedy in 1861 and 1862; but her début at the Théâtre Français in *Iphigénie* and Scribe's *Valérie* was not a success. After a brief retirement she reappeared at the Gymnase and the Porte Saint-Martin in burlesque, and in 1867 at the Odéon in

higher drama. Her success in Hugo's *Ruy Blas* led to her being recalled to the Théâtre Français, since which she has abundantly proved her dramatic genius. In 1879 she visited London, and again in 1880, about which time she severed connection with the Comédie Française under heavy penalty. In 1882 she married M. Damala, a Greek. Her tours both in Europe and America have as yet never failed to be successful, despite a somewhat painful eccentricity.

Bern'hardy, German classical scholar, born 1800, educated at Berlin, became professor at Halle in 1829, chief university librarian in 1844, died here 1875. Of his works the most valuable are his histories of the literature of Greece and Rome.

Ber'ni, FRANCESCO, Italian burlesque poet of the sixteenth century, born about 1490 in Tuscany. He took orders, and about 1530 became a canon of the Florence Cathedral, where he lived till his death in 1536. A vague story asserts that Berni, who was intimate with both Alessandro de' Medici and Ippolito de' Medici, was requested by each to poison the other, and that on his refusal he was poisoned himself by Alessandro. He takes the first place among the Italian comic poets. He wrote good Latin verses, and his *rifacimento* of Boiardo's *Orlando Innamorato* is an admirable work of its class.—Another Berni (COUNT FRANCESCO BERNI, who was born in 1610 and died in 1673) wrote eleven dramas and a number of lyrics.

Bernicia, an ancient Anglian kingdom stretching from the Firth of Forth to the Tees, and extending inland to the borders of Strathclyde. It was united with Deira, and became part of the kingdom of Northumbria.

Bernicle Goose. See *Barnacle Goose*.

Bernier (bern-yā), FRANÇOIS, French physician and traveller, born at Angers about 1625; set out on his travels in 1654, and visited Egypt, Palestine, and India, where he remained for twelve years as physician to the Great Mogul emperor Aurungzebe. After his return to France he published his *Travels*, an abridgment of the philosophy of Gassendi, a *Treatise on Freedom and Will*, and other works. He died at Paris in 1688.

Bernina (ber-nē'nà), a mountain in the Rhaetian Alps, 13,000 feet high, with the large Morteratsch Glacier. The Bernina Pass on the west of the mountain is 7695 ft. in height.

Bernini (ber-nē'nē), GIOVANNI LORENZO, Italian painter, sculptor, and architect, born 1598. His marble group, Apollo and Daphne, secured him fame at the age of eighteen, and he was employed by Urban VIII. to prepare plans for the embellishment of the Basilica of St. Peter's. The belfry and bronze *baldachino* for the high altar of St. Peter's, the front of the College de Propaganda Fide, the church of St. Andrea à Monte Cavallo, the palace Barberini, the model of the monument of the Countess Matilda, and the monument of Urban VIII. are among his chief works. He declined Mazarin's invitation to France in 1644; and though for a short time neglected after the death of his patron Urban, he speedily regained his position under Innocent X. and Alexander VII. In 1665 he accepted the king's invitation to Paris, travelling thither in princely state and with a numerous retinue. After his return to Rome he was charged with the decoration of the bridge of St. Angelo, the tomb of Alexander VII., &c. He died in 1680.

Bernis (ber-nē), FRANÇOIS JOACHIM DE PIERRES DE, cardinal and minister of Louis XV., born in 1715, died 1794. Madame de Pompadour presented him to Louis XV., who assigned him an apartment in the Tuileries, with a pension of 1500 livres. After winning credit in an embassy to Venice he rose rapidly to the position of minister of foreign affairs, and is possibly to be credited with the formation of the alliance between France and Austria which terminated the Seven Years' war. The misfortunes of France being ascribed to him he was soon afterwards banished from court, but was made Archbishop of Alby in 1764, and in 1769 ambassador to Rome, where he remained till his death. When the aunts of Louis XVI. left France in 1791 they fled to him for refuge, and lived in his house. The revolution reduced him to a state of poverty, from which he was relieved by a pension from the Spanish court. His verse procured him a place in the French Academy. The correspondence of Bernis with Voltaire contains matter of interest.

Bernouilli, or BERNOULLI (ber-nö-yē), a family which produced eight distinguished men of science. The family fled from Antwerp during the Alva administration, going first to Frankfort, and afterwards to Bâle. —1. JAMES, born at Bâle 1654, became professor of mathematics there 1687, and died 1705. He applied the differential cal-

culus to difficult questions of geometry and mechanics; calculated the loxodromic and catenary curve, the logarithmic spirals, the evolutes of several curved lines, and discovered the so-called *numbers of Bernouilli*. —2. JOHN, born at Bâle 1667, wrote with his brother James a treatise on the differential calculus; developed the integral calculus, and discovered, independently of Leibnitz, the exponential calculus. In 1694 he became doctor of medicine at Bâle, and in 1695 went, as professor of mathematics, to Groningen. After the death of his brother in 1705 he received the professorship of mathematics at Bâle, which he held until his death in 1748. —3. NICHOLAS, nephew of the former, born at Bâle in 1687; in 1705 went to Groningen to John Bernouilli, and returning with him to Bâle became there professor of mathematics. On the recommendation of Leibnitz he went as professor of mathematics to Padua in 1716, but returned to Bâle in 1722 as professor of logic, and in 1731 became professor of Roman and feudal law. He died in 1759. The three following were sons of the above-mentioned John Bernouilli:—4. NICHOLAS, born at Bâle 1695, became professor of law there in 1723, and died in St. Petersburg in 1726. —5. DANIEL, born at Groningen 1700; studied medicine. At the age of twenty-five he went to St. Petersburg, returning in 1733 to Bâle, where he became professor of anatomy and botany, and in 1750 professor of natural philosophy. He retired in 1777, and died in 1782. —6. JOHN, born at Bâle in 1710, went to St. Petersburg in 1732, became professor of rhetoric at Bâle in 1743, and in 1748 professor of mathematics. He died in 1790. The two following were his sons: —7. JOHN, licentiate of law and royal astronomer in Berlin, born at Bâle in 1744. He lived after 1779 in Berlin as director of the mathematical department of the Academy. Died 1807. —8. JAMES, born at Bâle in 1759; went to St. Petersburg, where he became professor of mathematics; married a grand-daughter of Euler, but died in 1789 while bathing in the Neva.

Bern'storff, the name of a German noble family, of whom the most distinguished was JOHANN HARTWIG ERNST, count von Bernstorff, Danish statesman under Frederick V. and Christian VII., born in Hanover 1712. He was the most influential member of the government, which distinguished itself under his direction by a wise neutrality during the Seven Years' war, &c., by mea-

asures for improving the condition of the Danish peasantry; by promoting science, and sending to Asia the expedition which Niebuhr accompanied. By his efforts Denmark acquired Holstein. He died 1772.

Ber'oë, a genus of small marine, coelenterate animals, order Ctenophora, transparent and gelatinous, globular in form, floating in the sea, and shining at night with phosphoric light.

Bero'sus, a priest of the temple of Belus at Babylon early in the third century B.C., who wrote in Greek a history of the Babylonian Chaldeans founded on the ancient archives of the temple of Belus. It is known only by the quotations from it in Apollodorus, Eusebius, Josephus, &c.

Berquin (ber-kan), ARNAUD, French writer, born in 1749, first attracted notice by his Idylles, and by several translations entitled Tableaux Anglais; but was best known by his *Ami des Enfants*, a series of narratives for children, for which, though plagiarized from Weisse's *Kinderfreund*, he received the prize of the French Academy in 1789. He was for some time the editor of the *Moniteur*. Died 1791.

Berri, or BERRY, formerly a province and dukedom, with Bourges as capital, almost in the centre of France. It is now mainly comprised in the departments Indre and Cher.

Berri, or BERRY, CHARLES FERDINAND, DUKE OF, second son of the Count d'Artois (afterwards Charles X.), born at Versailles Jan. 24, 1778. In 1792 he fled with his father to Turin and served under him and Condé on the Rhine. In 1801 he came to Britain, where he lived alternately in London and Scotland, occupied with plans for the restoration of the Bourbons. In 1814 he landed at Cherbourg, and passed on to Paris, gaining many adherents to the royal cause; but they melted away when Napoleon landed from Elba, and the count was compelled to retire with the household troops to Ghent and Alost. After the battle of Waterloo he returned to Paris, and in 1816 married. He was assassinated by Louvel, a political fanatic, on Feb. 14, 1820. The duke had by his wife, Carolina Ferdinanda Louisa, eldest daughter of Francis, afterwards king of the Two Sicilies, a daughter, Louise Marie Thérèse, afterwards Duchess of Parma, and a posthumous son subsequently known as Comte de Chambord.

Berry, a succulent fruit, in which the seeds are immersed in a pulpy mass inclosed by a thin skin. The name is usually given

to fruits in which the calyx is adherent to the ovary and the placentas are parietal, the seeds finally separating from the placenta and lying loose in the pulp. The term, however, is frequently used to include fruits in which the ovary is free and the placentas central, as the grape. Popularly it is applied to fruits like the strawberry, bearing external seeds on a pulpy receptacle, but not strictly berries.

Berryer (ber-yā), ANTOINE PIERRE, a French advocate and statesman, born in Paris 1790. In 1814 he proclaimed at Rennes the deposition of Napoleon, and remained till his death an avowed Legitimist. He assisted his father in the defence of Ney, secured the acquittal of General Cambronne, and defended Lamennais from a charge of atheism. His eloquence was compared with that of Mirabeau, and after the dethronement of Charles X. (1830) he remained in the Chamber as the sole Legitimist orator. His political services won for him a public subscription of 400,000 francs in 1836 to meet his pecuniary difficulties. In 1840 he was one of the counsel for the defence of Louis Napoleon after the Boulogne fiasco. In 1843 he did homage to the Comte de Chambord in London, adhering to him through the revolution of 1848, and voting for the deposition of the prince-president the morning after the *coup d'état*. He gained additional reputation in 1858 by his defence of Montalembert, and was counsel for the Patterson-Bonapartes in the suit for the recognition of the Baltimore marriage. In 1863 he was re-elected to the Chamber with Thiers, and in 1864 received a flattering reception in England. He died in 1868.

Bersaglieri (ber-sāl-yā'rē), a corps of Italian sharpshooters organized early in the reign of Victor Emmanuel by General Alessandro della Marmora. Two battalions took part in the Crimean war and distinguished themselves at the battle of Tchernaya (Aug. 16, 1855).

Berserk'er, a Scandinavian name for warriors who fought in a sort of frenzy or reckless fury, dashing themselves on the enemy in the most regardless manner. The first Berserker was said to have been Arngrim, the grandson of the eight-handed Starkader and the fair Alfhide. He wore no mail in battle, and had twelve sons, also called *Berserker*. The name is probably derived from the bear-sark or bear-skin shirt worn by early warriors.

Berthier (bert-yā), ALEXANDER, prince of Neufchâtel and Wagram, marshal, vice-constable of France, &c.; born 1753; son of a distinguished officer. While yet young he served in America with Lafayette, and after some years' service in France he joined the army of Italy in 1795 as general of division and chief of the general staff, receiving in 1798 the chief command. In this capacity he entered Rome, abducted Pius VI., abolished the papal government, and established a consular one. He followed Bonaparte to Egypt as chief of the general staff; was appointed by him minister of war after the 18th Brumaire; accompanied him to Italy in 1800, and again in 1805, to be present at his coronation; and was appointed chief of the general staff of the grand army in Germany. In all Napoleon's expeditions he was one of his closest companions, on several occasions rendering valuable services, as at Wagram in 1809, when he gained the title of *Prince of Wagram*. After Napoleon's abdication he was taken into the favour and confidence of Louis XVIII., and on Napoleon's return the difficulty of his position unhinged his mind, and he put an end to his life by throwing himself from a window. He left a son, Alexander (born in 1810), one of the most zealous adherents of Napoleon III.

Berthollet (ber-to-lā), CLAUDE LOUIS, COUNT, an eminent French chemist, born 1748; studied medicine; became connected with Lavoisier; was admitted in 1780 member of the Academy of Sciences at Paris; in 1794 professor in the normal school there. He followed Bonaparte to Egypt, and returned with him in 1799. Notwithstanding the various honours conferred on him by Napoleon he voted in 1814 for his dethronement, and was made a peer by Louis XVIII. His chief chemical discoveries were connected with the analysis of ammonia, the use of chlorine in bleaching, the artificial production of nitre, &c. His most important works were his *Essai de Statique Chimique* (1803), and the *Méthode de Nomenclature Chimique* (1787). He died in Paris 1822.

Bertholle'tia, the name given in honour of Berthollet to a genus of Myrtaceæ, of which only one species, *B. excelsa*, is known. This tree forms vast forests on the banks of the Amazon, Rio Negro, and Orinoco, averaging 100 feet in height, with a stem only 2 feet in diameter, and destitute of branches till near the top. It produces the well-known Brazil-nuts of commerce, which are

contained in a round and strong seed-vessel, to the number of from fifteen to fifty or more, and contain a great deal of oil.

Berwick (ber'ik), or more fully, BERWICK-ON-TWEED, a seaport town of England, formerly a parl. bor. and (with small adjoining district) a county by itself, but now incorporated with Northumberland, and giving name to a parl. div. of the county. It stands on the north or Scottish side of the Tweed, within half a mile of its mouth. It is surrounded by walls of earth faced with stone, along which is an agreeable promenade; the streets are mostly narrow, straggling, and irregular. The Tweed is crossed by an old bridge of fifteen arches and by a fine railway viaduct. Chief industries: iron-founding, the manufacture of engines and boilers, agricultural implements, feeding-cake, manures, ropes, twine, &c.; there is a small shipping trade. In the beginning of the twelfth century, during the reign of Alexander I., Berwick was part of Scotland, and the capital of the district called Lothian. In 1216 the town and castle were stormed and taken by King John; Bruce retook them in 1318; but, after undergoing various sieges and vicissitudes, both were surrendered to Edward IV. in 1482, and have ever since remained in possession of England. Pop. 13,378.—The county of Berwick, the most eastern border-county of Scotland, is bounded by the German Ocean, East Lothian, Roxburgh, Peebles, the river Tweed, and the English borders. It is nominally divided into the three districts of Lauderdale (the valley of the Leader), Lammermoor, and the Merse or March (the valley of the Tweed). Total area, 297,161 acres, of which two-thirds are productive. The principal rivers are the Tweed, the Leader, the Eye, the Whiteadder, and Blackadder. The minerals are unimportant, though freestone and marl are abundant. The county is in high repute for agriculture, but has few manufactures, the principal being paper. It returns one member to Parliament. The county town is Greenlaw. Pop. of co., 1891, 32,398.

Berwick, JAMES FITZ-JAMES, DUKE OF, natural son of the Duke of York (afterwards James II.) and Arabella Churchill, sister of Marlborough; was born at Moulins, in the Bourbonnais, in 1670, and first went by the name of Fitz-James. He received his education in France, served in Hungary, returned to England at the age of seventeen, and received from his father

the title of duke. On the landing of the Prince of Orange he went to France with his father, and he was wounded at the battle of the Boyne, where he nominally commanded. He afterwards served under Luxembourg in Flanders; in 1702 and 1703 under the Duke of Burgundy; then under Marshal Villeroi. In 1706 he was made marshal of France, and sent to Spain, where he gained the battle of Almanza, which rendered Philip V. again master of Valencia. In 1709 he held with honour the command in Dauphiné, displaying the highest strategic skill against the superior forces of the Duke of Savoy. He was killed at the siege of Philipsburg by a cannon-ball in 1734.

Berwick, NORTH, a royal (formerly a parl.) borough and seaport of Scotland, in Haddingtonshire, near the entrance of the Firth of Forth. Pop. 1698.

Ber'yl, a colourless, yellowish, bluish, or less brilliant green variety of emerald, the prevailing hue being green of various shades, but always pale, the want of colour being due to absence of chromium, which gives to the emerald its deep rich green. Its crystals, which are six-sided, are usually longer and larger than those of the precious emerald, and its structure more distinctly foliated. The best beryls are found in Brazil, in Siberia, and Ceylon, and in Dauria, on the frontiers of China. Beryls are also found in many parts of the United States. Some of the finer and transparent varieties of it are often called *aquamarine*.

Beryll'ium, a metal occurring in beryl and other minerals, of a colour similar to zinc. Specific gravity 2.1; malleable; does not oxidize in air or water. Atomic weight 9.4; symbol Be.

Berze'lius, JOHN JAMES, BARON, Swedish chemist, born in 1779; studied medicine at Upsala, and after holding one or two medical appointments was appointed lecturer in chemistry in the Stockholm military academy in 1806, and the following year professor of pharmacy and medicine. In 1808 he became a member of the Academy of Sciences at Stockholm, in 1810 director, and in 1818 its perpetual secretary. In 1818 the king made him a noble, and in 1835 a baron. He was also a deputy to the National Assembly. He discovered selenium and thorium, first exhibited calcium, barium, strontium, tantalum, silicium, and zirconium in the elemental state, and investigated whole classes of compounds, as those of fluoric acid, the metals in the ores of platinum,

tantalum, molybdenum, vanadium, sulphur salts, &c., and introduced a new nomenclature and classification of chemical compounds. In short, there was no branch of chemistry to which he did not render essential service. His writings comprise an important Text-book of Chemistry, View of the Composition of Animal Fluids, New System of Mineralogy, Essay on the Theory of Chemical Proportions, &c. He died in 1848.

Bes, an Egyptian god, represented clad in a lion's skin, with the head and skull of the animal concealing his features, and with a dwarfish and altogether grotesque appearance.

Besançon (bè-sāṅ-sōṅ), a town of Eastern France, capital of the department Doubs, is situated on a rocky peninsula washed on three sides by the river Doubs, and surmounted by a strong citadel. It is further strengthened by an outlying system of forts on neighbouring eminences. The streets are spacious and well laid out, with fine cathedral and churches, public buildings and promenades. The manufactures comprise linen, cotton, woollen, and silk goods, ironmongery, &c; but the principal industry is watchmaking, which employs about 13,000 persons. Besançon is the ancient *Vesontio*, *Besontium*, or *Bisontium* described by Cæsar. In the fifth century it came into possession of the Burgundians; in the twelfth passed with Franche-Comté to the German Empire. In 1679 it was ceded to France along with the rest of Franche-Comté, of which it remained the capital till 1793, with a parliament, &c., of its own. Pop. 1891, 56,055.

Besant', WALTER, English novelist, born 1838, educated in London and at Christ's College, Cambridge, where he graduated with mathematical honours. He was for a time professor in the Royal College, Mauritius. His first work, *Studies in Early French Poetry*, appeared in 1868, and to the field of French literature also belong his *French Humorists* and his *Rabelais* (for the Foreign Classics series). He has long been secretary to the Palestine Exploration Fund, and has published a *History of Jerusalem* in connection with Prof. Palmer, a life of whom he has also written. He is best known by his novels, a number of which were written in partnership with the late Mr. James Rice, including *Ready-Money Mortiboy*; *This Son of Vulcan*; *The Case of Mr. Lucraft*; *The Golden Butterfly*; *The Monks of Thelema*; &c. Since

Mr. Rice's death (1882) he has written *All Sorts and Conditions of Men*; *All in a Garden Fair*; *Dorothy Foster*; *The World Went very Well Then*; &c.

Besh'lik, a Turkish silver coin, value 5 piastres, or about 20 cts.

Besh'met, a common article of food among tribes of the mountainous districts of Asia Minor, consisting of grapes boiled into the consistence of honey.

Bessara'bia, a Russian province stretching in a north-westerly direction from the Black Sea, between the Pruth and Danube and the Dniester. It was conquered by the Turks 1474, taken by the Russians 1770, ceded to them by peace of Bucharest in 1812; the s.e. extremity was given to Turkey in 1856, but restored to Russia by treaty of Berlin, 1878, in exchange for the Dobrudsha. In the north the country is hilly, but in the south flat and low. It is fertile in grain, but is largely used for pasturage. Capital, Kishenef. Pop., chiefly Walachians, Gypsies, and Tartars, 1,397,842.

Bessar'ion, JOHANNES, titular patriarch of Constantinople and Greek scholar, born in Trebizond 1389 or 1395, died 1472. He was made archbishop of Nicæa by John Palæologus, whose efforts to unite the Greek and Roman churches he seconded in such a way as to lose the esteem of his countrymen and gain that of Pope Eugenius IV., who made him cardinal. He held various important posts, and was twice nearly elected pope. The revival of letters in the fifteenth century owed not a little to his influence. He left translations of Aristotle and vindications of Plato, with valuable collections of books and MSS.

Bessèges (bā-sāzh), a town, France, department of Gard, with important coal and iron mines and blast-furnaces. Pop. 9169.

Bes'sel, FRIEDRICH WILHELM, a German astronomer, born in 1784; appointed in 1810 director of the observatory at Königsberg. From 1824 to 1833 he completed a series of 75,011 observations on the celestial zone between 15° N. and 15° S. declination. In 1840 he called attention to the probable existence of a planetary mass beyond Uranus, resulting in the discovery of Neptune. He died in 1846. His principal works are the *Elements of Astronomy* (1818), and its continuations, the *Tabulæ Regiomontanæ* (1830) and *Astronomical Researches* (1841-42). His determination of the parallax of the star 61 Cygni was one of his most noteworthy practical achievements.

Bes'semer, a town of the United States, in Alabama, of recent origin, named after the inventor, situated in the centre of coal and iron fields, and with numerous blast-furnaces.

Bes'semer, SIR HENRY, English engineer and inventor, was born in Hertfordshire in 1813. He is celebrated for his new and cheap process of rapidly making steel from pig-iron by blowing a blast of air through it when in a state of fusion, so as to clear it of all carbon, and then adding just the requisite quantity of carbon to produce steel—a process which has introduced a revolution in the steel-making trade, cheap steel being now made in vast quantities and used for many purposes in which its price formerly prohibited its application. He was knighted in 1879.

Bestiaires (bes'ti-ārz), or **BESTIARIES**, a class of books very popular in the eleventh, twelfth, and thirteenth centuries, describing all sorts of animals, real and fabled, and forming a species of mediæval encyclopedia of zoology. The animals were treated as symbolic, and their peculiarities or supposed peculiarities spiritually applied. The volumes are to be found both in Latin and in the vernacular, in prose and in verse.

Beta. See *Bect*.

Betanzos (be-tān'thōs), a town of Northern Spain, prov. Coruña. Pop. 8122.

Bet'el, **BET'LE**, a species of pepper, *Chavica Betel*, a creeping or climbing plant, native of the East Indies, nat. order Piperaceæ. The leaves are employed to inclose a piece of the areca or betel-nut and a little lime into a pellet, which is extensively chewed in the East. The pellet is hot and acrid, but has aromatic and astringent properties. It tinges the saliva, gums, and lips a brick-red, and blackens the teeth. See next art.

Betel-nut, the kernel of the fruit of the beautiful palm *Arēca Catēchu*, found in



Leaf, flowers, and nut of Betel Palm (*Areca Catechu*).

India and the East, and named from being chewed along with betel-leaf. (See preceding art.) When ripe it is of the size of a cherry, conical in shape, brown externally, and mottled internally like a nutmeg. Ceylon alone exports 70,000 cwt. annually.

Beth'any, now called *El'Azariyeh* or *Lazarieh*, a village of Palestine at the base of Mount Olivet, about 2 miles E. of Jerusalem, formerly the home of Martha, Mary, and Lazarus, and the place near which the ascension of our Lord took place.

Bethes'da ('house of mercy'), a pool in Jerusalem near St. Stephen's Gate and the Temple of Omar. It is 460 feet long, 130 broad, and 75 deep, and now known as Birket Israel (see John v. 2-9).

Beth'lehem, the birthplace of Christ; a village, formerly a town, in Palestine, a few miles south from Jerusalem. Pop. about 3000, chiefly Christians, who make rosaries, crucifixes, &c., for pilgrims. There are three convents for Catholics, Greeks, and Armenians. A richly adorned grotto lighted with silver and crystal lamps, under the choir of the fine church built by Justinian, is shown as the actual spot where Jesus was born.

Bethlehem, a town of the United States, founded by Moravians in 1741 in Pennsylvania, on the Lehigh, across which is a bridge connecting it with S. Bethlehem, the seat of Lehigh University. Pop. in 1890, 6762.

Bethlehemites, a name applied (1) to the followers of Jerome Huss, from Bethlehem Church, Prague, where he preached; (2) to an order of monks, established according to Matthew Paris in 1257, with a monastery at Cambridge; (3) to an order founded in Guatemala about 1655 by Fray Pedro, a Franciscan tertiary, a native of Teneriffe. It spread to Mexico, Peru, and the Canary Islands. An order of nuns founded in 1667 bore the same name.

Bethlem-Gabor, that is, *Gabriel-Bethlem*, born of Protestant Magyar family in 1580; fought under Gabriel Bathori, and then joined the Turks, by whose aid he made himself Prince of Transylvania in 1613. In 1619 he assisted the Bohemians against Austria, and, marching into Hungary, was elected king by the nobles (1620). This title he surrendered in return for the cession to him by the Emperor Frederick II. of seven Hungarian counties and two Silesian principalities. After a brilliant reign he died in 1629 without heir.

Bethnal Green, an eastern suburban district and parish of London, Middlesex, now forming a parl. bor. having two divisions with two members. Pop. 1891, 129,134.

Béthune (bā-tün), an old town of France, dep. of Pas de Calais, with various industries and a considerable trade. The family of Béthune (extinct since 1807) is celebrated, and a branch of it, to which Cardinal Beaton belonged, was established in Scotland about the end of the twelfth century. Pop. 8178.

Bet'juans. See *Bechuanas*.

Bet'lis, or BITLIS, a town, Turkish Armenia, not far from Lake Van, one of the most ancient cities of Kurdistan. Pop. (Turks, Kurds, and Armenians), from 5000 to 10,000.

Beton, a concrete composed of lime and gravel, used to form artificial foundations on insecure sites.

Bet'ony, the popular name of *Stachys Betonica* (or *Betonica officinālis*), a labiate plant with purple flowers which grows in woods, was formerly much employed in medicine, and sometimes used to dye wool of a fine dark-yellow colour.—*Water betony*, *Scrophularia aquatica*, is named from the resemblance of its leaf to that of betony.

Betroth'ment, a mutual promise or contract between two parties, by which they bind themselves to marry. It was anciently attended with the interchange of rings, joining hands, and kissing in presence of witnesses; and formal betrothment is still the custom on the continent of Europe, being either solemn (made in the face of the church) or private (made before witnesses out of the church). As betrothments are contracts, they are valid only between persons whose capacity is recognized by law, and the breach of them may be the subject of litigation.

Bet'terton, THOMAS, English actor in the reign of Charles II., born in 1635; excelled in Shakspeare's characters of Hamlet, Othello, Brutus, and Hotspur, and was the means of introducing shifting scenes instead of tapestry upon the English stage. He died in 1710, and was buried in Westminster Abbey. He wrote the *Woman made a Justice*, a comedy; the *Amorous Widow*, or the *Wanton Wife*; *Diocletian*, a dramatic opera, &c. Mrs. Sanderson, whom he married in 1670, was also an actress of repute.

Betting, the staking or pledging of money or property upon a contingency or issue. The processes of betting may be best illus-

trated in connection with horse-racing, which furnishes the members of the betting fraternity with their best markets. Bettors are divided into two classes—the backers of horses, and the book-makers, or professional bettors, who form the *betting ring*, and make a living by betting against horses according to a methodical plan. By the method adopted by the professional bettor the element of chance is as far as possible removed from his transactions, so that he can calculate, with a reasonable prospect of having his calculations verified, on making more or less profit as the result of a season's engagements. Instead of backing any particular horse, the professional bettor lays the same sum against every horse that takes the field, or a certain number of them, and in doing so he has usually to give odds, which are greater or less according to the estimate formed of the chance of success which each of the horses has on which the odds are given. In this way, while in the event of the race being won (as is usually the case) by any of the horses entered in the betting-book of a professional bettor, the latter has always a certain fixed sum (say \$5000) to pay, he receives from the backers of the losers sums which vary in proportion to the odds given. Thus, if a book-maker is making a \$5000 book, and the odds against some horse is 4 to 1, he will, if that horse wins, have to pay \$5000, while, if it loses, he will receive \$1250. It usually depends upon which horse it is that wins a race whether the book-maker gains or loses. If the first favourite wins it is evidently the worst thing that could happen for the book-maker, for as he is bound to receive the sum of the amounts to which all the horses except one have been backed, the largest deduction must be made from his total receipts on account of the first favourite. Very frequently the receipts of the book-maker are augmented by sums paid on account of horses which have been backed and never run at all. Sometimes, although not often, the odds are given upon and not against a particular horse. Books may also be made up on the principle of betting against any particular horse getting a place among the first three. The odds in this case are usually one-fourth of the odds given against the same horse winning. Another mode of betting is that called a sweepstake, in which a number of persons join in contributing a certain stake, after which each of those taking part in the sweepstake has a horse

assigned to him (usually by lot), which he backs, and the backer of the winning horse gains the whole stakes. If there are more persons taking part in the sweepstake than there are horses running some of them must draw blanks, in which case of course their stakes are at once lost. In the years immediately preceding 1850 the practice of betting had increased to such an extent in England that an act for the suppression of betting-houses (16 and 17 Vict. c. 119, 1853) was passed, followed by acts condemning persons unlawfully playing or betting in the streets or public places as rogues and vagabonds. A later act (37 Vict. c. 15, 1874) imposed penalties on persons advertising or sending letters, circulars, telegrams, &c., as to betting. Similar legal restrictions are nominally operative in France and America.

Bettong. See *Kangaroo Rat*.

Bet'ula, the birch genus, type of the order Betulaceæ, which belongs to the amentaceous plants, and consists of trees or shrubs with alternate, simple, stipuled leaves, flowers in catkins, scales in place of perianth; genera *Betula* and *Alnus* (alder).

Betwá, a river of India rising in the Vindhya range in Bhopal, and after a northeasterly course of 360 miles joining the Jumna at Hamirpur.

Beust (boist'), FRIEDRICH FERDINAND, COUNT VON, Saxon and Austrian statesman, was born at Dresden in 1809, died in 1886. He adopted the career of diplomacy, and as member of embassies or ambassador for Saxony resided at Berlin, Paris, Munich, and London. He was successively minister of foreign affairs and of the interior for Saxony. At the London conference regarding the Schleswig-Holstein difficulty he represented the German Bund. He lent his influence on the side of Austria against Prussia before the war of 1866, after which, finding his position in Saxony difficult, he entered the service of Austria as minister of foreign affairs, became president of the ministry, imperial chancellor, and in 1868 was created count. In 1871-78 he was ambassador in London, in 1878-82 in Paris.

Beuthen (boi'tn), a town in Prussian Silesia near the s.e. frontier, in the government of Oppeln; the centre of a mining district. Manufactures of cloth and linens. Pop. 22,811.

Beveland (bā've-lānt), NORTH and SOUTH, two islands in the estuary of the Scheldt, Netherlands, province of Zeeland; area of North Beveland, 15,200 acres, pop. 6000;

area of South Beveland, 84,000 acres, pop. 23,000; chief town, Goes, 5000. It is very fertile, and has manufactures of salt, leather, beer, &c.

Bev'eridge, WILLIAM, an English divine, born in 1637, studied at Cambridge, and in his twenty-first year published a work on the study of Hebrew, Chaldee, Syriac, Arabic, and Samaritan, with a Syriac grammar. In 1660 he became vicar of Ealing, and was, after various ecclesiastical preferments, appointed Bishop of St. Asaph in 1704. He died at Westminster in 1708. His works include an Introduction to Chronology, 1669; his Synodicon, containing the Apostolic Canons, &c., 1672; and minor devotional treatises on the Christian life, public prayer, &c.

Bev'erley, town of England, E. riding of Yorkshire, 10 miles N.N.W. of Hull, and 1 from the river Hull, with which it has canal connection; has a fine Gothic minster, completed in the reign of Henry III., and in some regards unsurpassed. Pop. 12,539.

Beverly, Mass., about 18 miles northeast of Boston; a fine harbor, various manufactures. Pop. 1890, 10,821.

Bev'erley, JOHN OF, an English prelate and saint, born about the middle of the seventh century at Harpham, Yorkshire; appointed abbot of St. Hilda; afterwards Bishop of Hexham in 685; and two years later Archbishop of York. He founded a college for secular priests at Beverley, where he retired in 717, and died in 721. Bede, who was his pupil, believed that he could work miracles, a power attributed to his remains for some centuries.

Bewdley ('Beaulieu'), a town, England, Worcestershire, on the right bank of the Severn. Manufactures—combs, ropes, leather, and brasswork; some malting is also carried on. It now gives name to a parl. div. of the county. Pop. 1891, 2876.

Bewick (bū'ik), THOMAS, a celebrated English wood engraver, born in Northumberland in 1753. He was apprenticed to Beilby, an engraver in Newcastle, and executed the woodcuts for Hutton's Mensuration so admirably that his master advised him to turn his attention to wood-engraving. With this view he proceeded to London, and in 1775 received the Society of Arts prize for the best wood-engraving. Returning in a short time to Newcastle he entered into partnership with Beilby, and became known as a skilled wood-engraver and designer by his illustrations to Gay's Fables, Æsop's Fables,

&c. He quite established his fame by the issue in 1790 of his History of Quadrupeds (text compiled by Beilby), the illustrations of which were superior to anything hitherto produced in the art of wood-engraving. In 1797 appeared the first, and in 1804 the second volume of his British Birds, generally regarded as the finest of his works (text partly by Bewick). Enlarged and improved editions of both books soon followed. Among his other works may be cited the engravings for Goldsmith's Traveller and Deserted Village, Parnell's Hermit, and Somerville's Chase. He died in 1828. His younger brother John, who gave promise of attaining equal eminence, died in 1795, aged thirty-five.

Bex (bā), a village of Switzerland, canton Vaud, with salt works and warm sulphur baths now much frequented. Pop. 4000.

Bey. See *Beg*.

Beyle (bāl), MARIE-HENRI, a French author widely known by his pseudonym *de Stendhal*; born at Grenoble 1783; held civil and military appointments under the empire; took part in the Russian campaign of 1812, thence until 1821 lived at Milan, chiefly occupied with works on music and painting. After nine years' residence at Paris he became in 1830 consul at Trieste, and in 1833 at Civita Vecchia. In 1841 he returned to Paris, and died in 1842. The distinguishing feature of his works was the application of acutely analytic faculties to sentiment in all its varieties, his best books being the *De l'Amour*, 1822; *Le Rouge et le Noir*, 1831; and *La Chartreuse de Parme*, 1839.

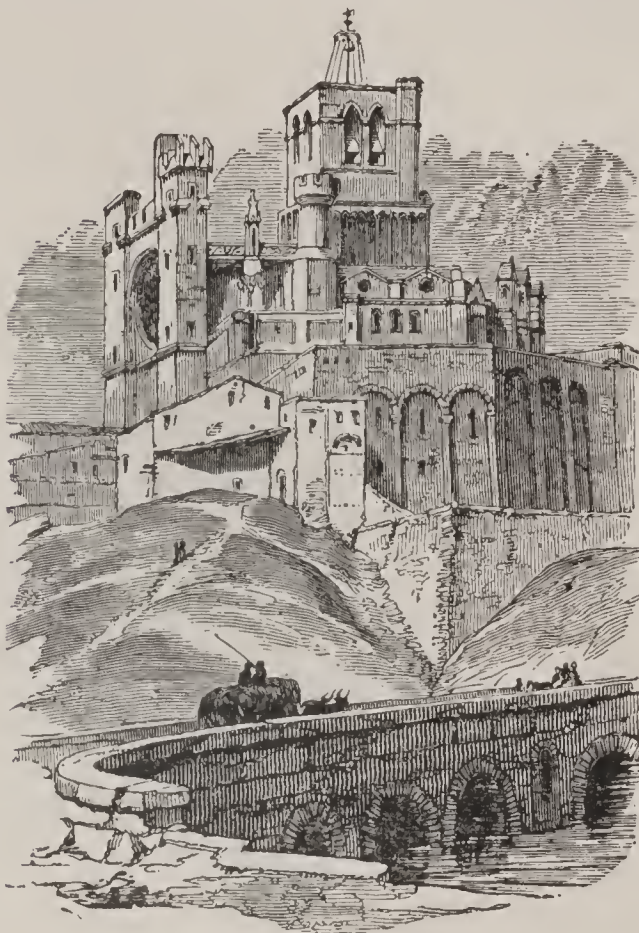
Beyrout (bī-rōt'), or BEIRUT (ancient *Berytus*), the chief seaport of Syria, pashalic of Acre, 60 miles N.W. of Damascus; pop. 70,000, mostly Christians. It stands on a tongue of land projecting into an open bay and backed by the Lebanon range, and has rapidly increased since 1835, mainly owing to the extension of the silk trade, of which it is the centre. Its other chief exports are olive-oil, cereals, sesame, tobacco, and wool; manufactures are silk and cotton. The old town has narrow, dirty streets, very different from the new with its modern houses, hotels, churches, colleges, and schools, gardens and carriage drives. Gas has recently been introduced. In ancient times Beyrout was a large and important Phœnician city. The Byzantine emperor Theodosius II. raised it to the rank of a metropolis, and it again rose to importance during the Crusades. In later times it was

long in the possession of the Druses. It was bombarded and taken by the British in 1840.

Be'za (properly, *de Bèze*), **THEODORE**, next to Calvin the most distinguished man in the early reformed church of Geneva; born of a noble family at Vezelay, Burgundy, 1519; educated in Orleans under Melchior Volmar, a German scholar devoted to the Reformation; in 1539 became a licentiate of law, and went to reside at Paris. His habits at this time were dissipated, and his *Poemata Juvenilia*, Latin verses of a more than Ovidian freedom, were afterwards a frequent ground of attack upon him. The reforming influence of a severe illness led in 1548 to his retirement to Geneva and his marriage with his mistress. In 1549 he became professor of Greek at Lausanne, occupying himself with the completion of Marot's translation of the Psalms and the study of the New Testament, and corresponding frequently with Calvin. In 1558 he was sent by the Swiss Calvinists on an embassy to obtain the intercession of the Protestant princes of Germany for the release of Huguenots imprisoned in Paris. In the following year he went to Geneva as a preacher, and soon after became a professor of theology, and the most active assistant of Calvin. He also rendered admirable service to the cause of the reformers at the court of the King of Navarre and in attendance upon Condé and Coligny. At Calvin's death in 1564 the administration of the Genevese Church fell entirely to his care. He presided in the synods of the French Calvinists at La Rochelle (1571) and at Nismes (1572); was sent by Condé (1574) to the court of the elector palatine; and at the religious conference at Montpellier (1586) opposed James Andreas and the theologians of Würtemberg. At the age of sixty-nine he married his second wife (1588), and in 1597 wrote a lively poetical refutation of the rumour that he had recanted and was dead. In 1600 he resigned his official functions, and he died in retirement in 1605. Among his many works, his *History of Calvinism in France* from 1521 to 1563, and *Theological Treatises*, are still esteemed; but he is most famous for his Latin translation of the New Testament.

Bez'ant, a Byzantine gold ducat, a round, flat piece of gold, without impression, supposed to have been the current coin of Byzantium. They are frequently employed as a heraldic charge, a custom supposed to have been introduced by the Crusaders.

Béziers (*bā-zyār*; anc. *Beterræ*), a town in Southern France, dep. Hérault, beautifully situated on a height and surrounded by old walls, its chief edifices being the cathedral, a Gothic structure crowning the



The Cathedral of Béziers.

height on which the town stands, and the old Episcopal palace, now used for public offices; manufactures: woollens, hosiery, liqueurs, chemicals, &c., with a good trade in spirits, wool, grain, oil, verdigris, and fruits. In 1209 Béziers was the scene of a horrible massacre of the Albigenses. Pop. 1891, 45,475.

Bezique (*be-zēk'*), a simple game of cards most commonly played by two persons with two packs. It was a favourite game at the French court in the eighteenth century, and was some time ago revived in England.

Be'zoar, a concretion or calculus, of a roundish or ovate form, met with in the stomach or intestines of certain animals, especially ruminants. Nine varieties of bezoars have been enumerated, broadly divisible into those which consist mainly of mineral and those which consist of organic matter. The true oriental bezoars, obtained from the gazelle, belong to the second class. They are formed by accretion round some

foreign substance, a bit of wood, straw, hair, &c., and were formerly regarded as efficacious in preventing infection and the effects of poison.

Bhagalpur (bhä-gal-pör'), a city in Bengal, capital of a district and division of the same name, on the right bank of the Ganges, here seven miles wide. There are several indigo works in the neighbourhood. Pop. 68,238.—The division of Bhagalpur has an area of 20,492 sq. miles, and a pop. (chiefly Hindus and Mohammedans) of 8,063,160.—The district has an area of 4268 square miles; pop. 1,961,158.

Bhamo, a town of Burmah on the Upper Irrawaddy, about 40 miles from the Chinese frontier. It is the starting-point of caravans to Yunnan, and is in position to become one of the great emporiums of the East in event of a regular overland trade being established between India and West China.

Bhandara (bhan-dä'ra), a town of India, Central Provinces, with manufactures of hardware and cottons. Pop. 11,150.

Bhang. See *Hashish*.

Bhartpur'. See *Bhurtpore*.

Bhar'trihari, Indian poet, reputed author of a book of apophthegms, according to legend a dissolute brother of King Vikramāditya (first century B.C.), who became a hermit and ascetic. The collection of 300 apophthegms bearing his name is, however, probably an anthology. 200 of them were translated into English and published at Nürnberg by Abraham Roger as early as 1653, the first Indian writings known in Europe.

Bhatgaon (bhät-gä'on), a town of Nepal, about 8 miles from Khatmandu. Pop. 30,000.

Bheels, or BHILS, a Dravidic race inhabiting the Vindhya, Satpura, and Satmala Hills, a relic of the Indian aborigines driven from the plains by the Aryan Rajputs. They appear to have been orderly and industrious under the Delhi emperors; but on the transfer of the power in the eighteenth century from the Moguls to the Marathas they asserted their independence, and being treated as outlaws took to the hills. Various attempts to subdue them were made by the Gaekwar and by the British in 1818 without success. A body of them was, however, subsequently reclaimed, and a Bheel corps formed, which stormed the retreats of the rest of the race and reduced them to comparative order. The hill Bheels wear little clothing, and live precariously on grain,

wild roots and fruits, vermin, &c., but the lowland Bheels are in many respects Hinduized. Their total numbers are about 750,000.

Bhel. See *Bel*.

Bhilsa, or BILSA, a town of India, in Gwalior State, on a trap-rock, right bank of the Betwa. It has a fort and well-built suburb, but is chiefly interesting on account of the Buddhist topes in the neighbourhood, those at Sanchi (4½ miles s.w.) being especially noteworthy. Pop. 7070.

Bholan' Pass. See *Bolan Pass*.

Bhooj. See *Bhuj*.

Bhopal (bho-päl'), a native state of Central India under British protection, on the Nerbudda, in Malwah. Area, 6874 sq. miles. The country is full of jungles, and is traversed by a part of the Vindhya Mts. The soil is fertile, yielding wheat, maize, millet, pease, and the other vegetable productions of Central India. Chief exports: sugar, tobacco, ginger, and cotton. The district is well watered by the Nerbudda, Betwa, and minor streams. Pop. 954,901.—The capital of above state, also called Bhopal, is on the boundary between Malwah and Gundwana. Pop. 55,402. Fine artificial lakes east and west of the town.

Bhúj (bhöj), chief town of Cutch in India, Bombay presidency, at the base of a fortified hill, with military cantonments, high school and school of art, mausoleums of the Raos or chiefs of Cutch, &c. Pop. 22,308.

Bhurtpore', or BHARTPUR', a native state, India, in Rajputana, bounded E. by Agra, s. and w. by the Rajput States. Area, 1974 sq. miles. The surface is generally low, and the state is scantily supplied with water; soil generally light and sandy; chief productions: corn, cotton, and sugar. The country is also known as Brij, and is the only Jāt state of any size in India. Under British protection since 1826. Pop. 645,540.—The capital, which has the same name, is a fortified place, and was formerly of great strength, Lord Lake being compelled to raise the siege in 1805 after losing 3100 men. It was taken by Lord Combermere in 1827. The rajah's palace is a large building of red and yellow freestone presenting a picturesque appearance. Pop. 1891, 68,033.

Bhutan (bhü-tän'), an independent state in the Eastern Himalayas, with an area of about 10,000 sq. miles, lying between Thibet on the N. and Assam and the Jalpaiguri District on the S., and consisting of rugged and lofty mountains, abounding in sublime and

picturesque scenery. Pop. 20,000 or 30,000. The Bhutaneses are a backward race, governed by a *Dharm Rajah*, regarded as an incarnation of deity, and by a *Deb Rajah*, with a council of eight. They are nominally Buddhists. After various aggressive incursions and the capture and ill-treatment of Mr. Ashley Eden, the British envoy, in 1863, they were compelled to cede to the British considerable portions of territory, in return for a yearly allowance of £2500.

Biafra, BIGHT OF, an African bay run-

ning in from the Gulf of Guinea, having the Cameroon Mountains at its inner angle, and containing the island of Fernando Po.

Bialystok, or BJELOSTOK, town, Russian Poland, province of Grodno; well built, with a palace formerly belonging to the Counts Braniski, and known as the 'Polish Versailles.' Pop. 39,994.

Biana, a town of India, Bhurtpore, an old place with many temples, venerated by Mahomedans. Pop. 8758.



The Rajah's Palace, Bhurtpore.

Biancavilla, a town of Sicily on the southern side of Etna. Pop. 13,021.

Bianchini (-kē'nē), FRANCESCO, Italian historian and astronomer, born 1662. Pope Alexander VIII. bestowed on him a rich benefice, with the appointment of tutor and librarian to his nephew Cardinal Pietro Ottoboni; and Clement XI. appointed him secretary to the commission for the correction of the calendar. He spent eight years in the endeavour to draw a meridian across Italy like that drawn by Cassini through France; left a portion of a Universal History, and works on the planet Venus, on the Sepulchre of Augustus, &c. Died 1729.

Biard (bē-är), AUGUSTE FRANÇOIS, a French *genre* painter, born in 1798, died in 1882. He travelled extensively, visiting Spain, Greece, Syria, Egypt, Mexico, Brazil, &c. Among his best-known pictures have been the Babes in the Wood (1828); the Beggar's Family (1836); the Combat with Polar Bears (1839); and the Strolling Players, now in the Luxembourg. A strong

element of caricature runs through most of his works.

Biarritz, a small seaport, France, Basses-Pyrénées, near Bayonne. It became a fashionable watering-place during the reign of Napoleon III., who had an autumn residence there. Pop. 8527.

Bi'as, one of the seven sages of Greece, born at Priene, in Ionia; flourished about 570 B.C. He appears to have been in repute as a political and legal adviser, and many sayings of practical wisdom attributed to him are preserved by Diogenes Laertius.

Bias (bi-äs'), one of the five large rivers of the Punjab, India, rising in the Himalayas (13,326 ft.), and flowing first in a westerly and then in a southerly direction until it unites with the Sutlej after a course of 300 miles.

Bib, a fish of the cod family (*Morrhua lusca*), found in the British seas, about a foot long, the body very deep, esteemed as excellent eating. It is called also *pout* or *whiting pout*.

Biberach (bē'be-rāh), a town of Germany, Württemberg, on the Riss, formerly a free imperial city. The French, under Moreau, defeated the Austrians near Biberach in 1796. Pop. 7799.

Bible (Greek *biblia*, books, from *biblos*, the inner bark of the papyrus, on which the ancients wrote), the collection of the Sacred Writings or Holy Scriptures of the Christians. Its two main divisions, one received by both Jews and Christians, the other by Christians only, are improperly termed Testaments, owing to the confusion of two meanings of the Greek word *diathēkē*, which was applied indifferently to a covenant and to a last will or testament. The Jewish religion being represented as a compact between God and the Jews, the Christian religion was regarded as a new compact between God and the human race; and the Bible is, therefore, properly divisible into the Writings of the Old and New Covenants. The books of the Old Testament received by the Jews were divided by them into three classes: 1. The Law, contained in the Pentateuch or five books of Moses. 2. The Prophets, comprising Joshua, Judges, I. and II. Samuel, I. and II. Kings, Isaiah, Jeremiah, Ezekiel, and the twelve minor prophets. 3. The Ketubim, or Hagiographa (*holy writings*), containing the Psalms, the Proverbs, Job, in one division; Ruth, Lamentations, Ecclesiastes, Esther, the Song of Solomon, in another division; Daniel, Ezra, Nehemiah, I. and II. Chronicles, in a third. These books are extant in the Hebrew language; others, rejected from the canon as apocryphal by Protestants, are found only in Greek or Latin.

The books of Moses were deposited, according to the Bible, in the tabernacle, near the ark, the others sacred writings being similarly preserved. They were removed by Solomon to the temple, and on the capture of Jerusalem by Nebuchadnezzar probably perished. According to Jewish tradition Ezra, with the assistance of the great synagogue, collected and compared as many copies as could be found, and from this collation an edition of the whole was prepared, with the exception of the writings of Ezra, Malachi, and Nehemiah, added subsequently, and certain obviously later insertions in other books. When Judas Maccabæus repaired the temple, which had been destroyed by Antiochus Epiphanes, he placed in it a correct copy of the Hebrew Scriptures, whether the recension of Ezra or not is not known. This

copy was carried to Rome by Titus. The exact date of the determination of the Hebrew canon is uncertain, but no work known to be written later than about 100 years after the captivity was admitted into it by the Jews of Palestine. The Hellenistic or Alexandrian Jews, however, were less strict, and admitted many later writings, forming what is now known as the Apocrypha, in which they were followed by the Latin Church. The Protestant churches at the Reformation gave in their adherence to the restricted Hebrew canon, though the Apocrypha was long included in the various editions of the Bible. The division into chapters and verses, as it now exists, is of comparatively modern origin, though divisions of some kind were early introduced. Cardinal Hugo de Sancto Caro, in the thirteenth century, divided the Latin translation known as the Vulgate into chapters for convenience of reference, and similar divisions were made in the Hebrew text by Rabbi Mordecai Nathan in the fifteenth century. About the middle of the sixteenth century the verses in Robert Stephanus's edition of the Vulgate were for the first time marked by numbers.

The earliest and most famous version of the Old Testament is the Septuagint, or Greek translation, executed by Alexandrian Greeks, and completed probably before 130 B.C., different portions being done at different times. This version was adopted by the early Christian church and by the Jews themselves, and has always held an important place in regard to the interpretation and history of the Bible. The Syriac version, the *Peshito*, made early in the second century after Christ, is celebrated for its fidelity. The Coptic version was made from the Septuagint in the third or fourth century. The Gothic version, by Ulphilas, was made from the Septuagint in the fourth century, but mere insignificant fragments of it are extant. The most important Latin version is the Vulgate, executed by Jerome, partly on the basis of the original Hebrew, and completed in 405 A.D.

The printed editions of the Hebrew Bible are very numerous. The first edition of the entire Hebrew Bible was printed at Soncino in 1488. The Brescian edition of 1494 was used by Luther in making his German translation. The editions of Athias (1661 and 1667) are much esteemed for their beauty and correctness. Van der Hooght followed the latter. Dr. Kennicott

BIBLE.

did more than any one of his predecessors to settle the Hebrew text. His Hebrew Bible appeared at Oxford in 1776–80, two vols. folio. The text is from that of Van der Hooght, with which 630 MSS. were collated. De Rossi, who published a supplement to Kennicott's edition (Parma, 1784–99, five vols. 4to), collated 958 MSS. The German Orientalists, Gesenius, De Wette, &c., in recent times, have done very much towards correcting the Hebrew text. The oldest MS. of the Hebrew Bible belongs to 1106, and presents what is known as the Massoretic text, that is the text provided with the vowel points and other markings which were inserted by Jewish scholars known as the Massoretes.

The books of the New Testament were all written in Greek, unless it be true, as some critics suppose, that the Gospel of St. Matthew was originally written in Hebrew. Most of these writings have always been received as canonical; but the Epistle to the Hebrews, commonly ascribed to St. Paul, that of St. Jude, the second of Peter, the second and third of John, and the Apocalypse, have been doubted. The three oldest MSS. are: (1) the Sinaitic MS., discovered by Tischendorf in a convent on Mount Sinai in 1859, assigned to the middle of the fourth century; (2) the Vatican MS. at Rome, of similar date; (3) the Alexandrine MS. in the British Museum, assigned to the middle of the fifth century. Each MS. contains also the Septuagint Greek of the Old Testament in great part. The Vulgate of Jerome embraces a Latin translation of the New as well as of the Old Testament, based on an older Latin version. The division of the text of the New Testament into chapters and verses was introduced later than that of the Old Testament; but it is not precisely known when or by whom. The Greek text was first printed in the Complutensian Polyglot, in 1514; in 1516 an edition of it was published at Basel by Erasmus. Among recent valuable editions are those of Lachmann, Tischendorf, Tregelles, and Westcott and Hort.

Of translations of the Bible into modern languages the English and the German are the most celebrated. Considerable portions were translated into Anglo-Saxon, including the Gospels and the Psalter. Wycliffe's translation of the whole Bible (from the Vulgate), begun about 1356, was completed shortly before his death, which took place in 1384. The first printed version of the Bible

in English was the translation of William Tindall or Tyndale, whose New Testament was printed in quarto at Cologne in 1525, a small octavo edition appearing at the same time at Worms. Toustall, bishop of London, caused the first edition to be bought up and burned. The Pentateuch was published by Tindall in 1530, and he also translated some of the prophetic books. Our translation of the New Testament is much indebted to Tindall's. A translation of the entire Bible was published by Miles Coverdale in 1535. It was undertaken at the instance of Thomas Cromwell, and being made from German and Latin versions was inferior to Tindall's. After the death of Tindall John Rogers undertook the completion of his translation and the preparation of a new edition. In this edition the latter part of the Old Testament (after II. Chronicles) was based on Coverdale's version. A revised edition was published in 1539 under the superintendence of Richard Taverner. In the same year as Taverner's another edition appeared, printed by authority, with a preface by Cranmer, and hence called Cranmer's Bible. This was the first Bible printed by authority in England, and a royal proclamation in 1540 ordered it to be placed in every parish church. This continued, with various revisions, to be the authorized version till 1568. In 1557–60 an edition appeared at Geneva, based on Tindall's—the work of Whittington, Coverdale, Goodman, John Knox, and other exiles—and commonly called the Geneva or Breeches Bible (from 'breeches' standing instead of 'aprons' in Gen. iii. 7). This version, for sixty years the most popular in England, was allowed to be printed in England under a patent of monopoly in 1561. It was the first printed in Roman letters, and was also the first to adopt the plan previously adopted in the Hebrew of a division into verses. It omitted the Apocrypha, left the authorship of the Epistle to the Hebrews open, and put words not in the original in italics. The Bishops' Bible, published 1568 to 1572, was based on Cranmer's, and revised by Archbishop Parker and eight bishops. It succeeded Cranmer's as the authorized version, but did not commend itself to scholars or people. In 1582 an edition of the New Testament, translated from the Latin Vulgate, appeared at Rheims, and in 1609–10 the Old Testament was published at Douay. This is the version recognized by the R. Catholic Church.

In the reign of James I. a Hebrew scholar, Hugh Broughton, insisted on the necessity of a new translation, and at the Hampton Court Conference (1604) the suggestion was accepted by the king. The work was undertaken by forty-seven scholars divided into six companies, two meeting at Westminster, two at Oxford, and two at Cambridge, while a general committee meeting in London revised the portions of the translation finished by each. The revision was begun in 1607, and occupied three years, the completed work being published in folio in 1611. By the general accuracy of its translation and the purity of its style it superseded all other versions. In response, however, to a widely-spread desire for a translation even yet more free from errors, the Convocation of Canterbury in 1870 appointed a committee to consider the question of revising the English version. Their report being favourable two companies were formed, one for the Old Testament and one for the New, consisting partly of members of Convocation and partly of outside scholars. Two similar companies were also organized in America to work along with the British scholars. The result was that the revised version of the New Testament was issued in 1881; that of the Old Testament in 1884. The revision has been carried out in a spirit of reverence towards the older version, and few alterations have been admitted but such as have been called for on the score of accuracy, clearness, and uniformity—see the revisers' prefaces.

In Germany some seventeen translations of the Bible, partly in the High German partly in the Low German dialect, appeared between the invention of printing and the Reformation, but they had all to make way for Luther's great translation — the New Testament in 1522, and the whole Bible in 1534.

Bible Christians; a small sect founded by a Cornish Methodist preacher called O'Bryan, who professes to follow only the doctrines of the Bible and reject all human authority in religion. Called also Bryanites.

Bible Communists. See *Perfectionists*.

Bible Societies, societies formed for the distribution of the Bible or portions of it in various languages, either gratuitously or at a low rate. A clergyman of Wales, whom the want of a Welsh Bible led to London, occasioned the establishment of the British and Foreign Bible Society, March 7, 1804.

A great number of similar institutions were soon formed in all parts of Great Britain, and afterwards on the Continent of Europe, in Asia and in America, and connected with the British as a parent or kindred society. Since the formation of the British and Foreign Bible Society it has circulated over 340 versions of the whole or parts of the Scriptures in 298 different languages. In more than thirty instances languages have for the first time been reduced to a written form in order to translate into them and circulate amongst the people the Bibles of this society. The total issues to April 1, 1892, were 131,844,796 copies, while about 70,000,000 additional copies have been distributed by the kindred societies which have sprung out of it. The proceedings of the British and Foreign Bible Society gave rise to several controversies, one of which related to the neglecting to give the Prayer-book with the Bible. Another controversy related to the circulation of the Apocrypha along with the canonical books. The Edinburgh Bible Society established in 1809, and up to 1826 connected with the British and Foreign Bible Society, seceded on the occasion of the controversy regarding the circulation of the Apocrypha, and up to 1860 existed as a separate society. In 1861 this society was united with the National, the Glasgow, and other Bible societies, into a whole called the National Bible Society of Scotland, having its headquarters in Edinburgh and Glasgow. Its total issue is now nearly 6,000,000. The Hibernian Bible Society, which has its headquarters in Dublin, was established in 1806, to encourage a wider circulation of the Bible in Ireland. Total issue about 5,000,000 copies. In Germany the principal Bible society is the Prussian, established at Berlin in 1814 and having many auxiliaries. France has two principal Bible Societies, whose headquarters are at Paris, the one instituted in 1818, the other in 1833. Switzerland possesses various Bible societies, chief among which are those of Basel (1804), Bern, Lausanne, and Geneva. In the Netherlands there has existed since 1815 a fraternal union of different sects for the distribution of Bibles. The Swedish Bible Society was instituted in 1808, and the Norwegian Bible Society in 1816. The first Russian Society in St. Petersburg printed the Bible in thirty-one languages and dialects spoken in the Russian dominions, and auxiliary societies were formed at Irkutsk, Tobolsk, among the Kirghises,

Georgians, and Cossacks of the Don; but they were all suppressed by an imperial ukase in 1826. In 1831 a new Bible Society was instituted at St. Petersburg—namely, the Russian Evangelical Bible Society. Italy, Spain, and Portugal have had as yet no Bible societies; but the British societies are energetic in providing them with Bibles in their own tongues. In the United States of America the great American Bible Society, formed in 1816, acts in concert with auxiliary societies in all parts of the Union. Its total issue since its organization to April 1, 1892, was 55,531,903.

Bib'lia Pau'perum ('Bible of the poor'), the name for block-books common in the middle ages, and consisting of a number of rude pictures of Biblical subjects with short explanatory text accompanying each picture.

Bibliog'raphy (Gr. *biblion*, a book, and *graphō*, I describe), the knowledge of books, in reference to the subjects discussed in them, their different degrees of rarity, curiosity, reputed and real value, the materials of which they are composed, and the rank which they ought to hold in the classification of a library. The subject is sometimes divided into *general*, *national*, and *special* bibliography, according as it deals with books in general, with those of a particular country, or with those on special subjects or having a special character (as early printed books, anonymous books). A subdivision of each of these might be made into *material* and *literary*, according as books were viewed in regard to their mere externals or in regard to their contents.

Hardly any branch or department of bibliography has as yet been quite adequately treated. The reduction of bibliographic material to something like method and system was undoubtedly the work of France. Brunet's *Manuel du Libraire*, containing, in an alphabetical form, a list of the most valuable and costly books of all literatures; Barbier's *Dictionnaire des Ouvrages Anonymes*; Renouard's *Catalogue d'un Amateur*, for a long time the best guide of French collectors; and the *Bibliographie de la France*, recording the yearly accumulation of literary works, were all first works in their respective departments. The authors of anonymous and pseudonymous works are made known in Barbier's *Dictionnaire des Ouvrages Anonymes et Pseudonymes* (Paris, 1806-9), treating only of French and Latin works; Quérard's *Dictionnaire des Ouvrages Polyonymes et Anonymes de la Littérature*

Française (Paris, 1854-56), and his *Supercherries Littéraires Dévoilées* (Literary Frauds Unveiled, Paris, 1845-56). Lorenz's *Catalogue Général de la Librairie Française* (1867-87), gives all books published in France in 1840-85.

The beginnings of English bibliography are to be found in Blount's *Censura Celsiorum Auctorum* (1690), and Oldys' *British Librarian* (1737). Among library catalogues of which it can boast are those of the Bodleian Library, the British Museum (only partly printed), and the Advocates' Library, Edinburgh. Catalogues compiled on a scientific system, by which the reader is assisted in his researches after books on a particular subject, are not uncommon on the European continent; but the only extensive one of the kind in Britain is that of the Signet Library, Edinburgh. A valuable classified catalogue, so far as it goes, is Sonnenschein's *The Best Books*, a guide to about 25,000 modern works on all subjects. Of other English bibliographical works we may mention the *Typographical Antiquities* of Ames, Herbert, and Dibdin; Brydges' *Censura Literaria* (1805); Dibdin's *Bibliographical Decameron* (1817); Dr. Robert Watt's *Bibliotheca Britannica* (1824, 4 vols., two of subjects and two of authors); Lowndes' *Bibliographer's Manual*, edited by H. G. Bohn, 1869; S. A. Allibone's *Critical Dictionary of English Literature and British and American Authors*, 1859-71; &c. The bulky booksellers' catalogues of Bohn and Quaritch; Low's *English Catalogue of books published from 1835 onwards*, in continuation of the *London Catalogue* giving all English books published from 1700; and the *Reference Catalogue of Current Literature* are also valuable bibliographical works. The *Dictionary of the Anonymous and Pseudonymous Literature of Great Britain* by Halkett and Laing (4 vols. 1882-88) is of high value. American literature has already given rise to a series of bibliographical works on both sides of the Atlantic, *e.g.* Ternaux-Compans, *Bibliothèque Américaine*, 1837; Rich's *Bibliotheca Americana Nova*, giving books published between 1700 and 1844; *Bibliographical Catalogue of Books, Translations of the Scriptures, and other publications in the Indian Tongues of the United States*, 1849; Duyckinck's *Cyclopedia of American Literature*, 1856; Trübner's *Bibliographical Guide to American Literature*, 1856; and the *General American Catalogue* compiled by Lynds

E. Jones and F. Leypoldt, 1880 (with later continuations).

Of German bibliographical works we shall only mention Heinsius' *Allgemeines Bücherlexikon*, giving books published between 1700 and 1888, and Keyser's *Vollständiges Bücherlexikon*, giving books published between 1750 and 1882. German bibliography is particularly rich in the literature of separate sciences; and the bibliography of the classics and of ancient editions was founded by the Germans. See also *Bibliomania*.

Bib'liomancy, divination performed by means of books, and especially of the Bible; also called *sortes biblicæ*, or *sortes sanctorum*. It consisted in taking passages at hazard, and drawing indications thence concerning things future, in the same way that the ancients drew prognostications from the works of Homer and Virgil. In 465 the Council of Vannes condemned the practice, as did the Councils of Agde and Auxerre. But in the twelfth century we find it employed as a mode of detecting heretics, and in the Gallican Church it was long practised in the election of bishops, the installation of abbots, &c.

Biblioma'nia ('book-madness'), a passion for possessing curious books, which has reached its highest development in France and England, though originating, like Tulipomania, in Holland, towards the close of the seventeenth century. The true bibliomanist is determined in the purchase of books, less by the value of their contents, than by certain accidental circumstances attending them, as that they belong to particular classes, are made of singular materials, or have something remarkable in their history. One of the most common forms of the passion is the desire to possess complete sets of works, as of the various editions of the Bible or of single classics; of the editions *in usum Delphini* and *cum notis variorum*; of the Italian classics printed by the Academy *della Crusca*; of the works printed by the Elzevirs or by Aldus. Scarce books, prohibited books, and books distinguished for remarkable errors or mutilations have also been eagerly sought for, together with those printed in the infancy of typography, called *incunabula*, first printed editions (*editiones principes*) and the like. Other works are valued for their miniatures and illuminated initial letters, or as being printed upon vellum, upon paper of uncommon materials, upon various substitutes for paper,

or upon coloured paper, in coloured inks, or in letters of gold or silver. In high esteem among bibliomanists are works printed on large paper, with very wide margins, especially if uncut, also works printed from copper plates, *éditions-de-luxe*, and limited issues generally. Bibliomania often extends to the binding. In France the bindings of Derome and Bozerian are most valued; in England those of Charles Lewis and Roger Payne. Many devices have been adopted to give a factitious value to bindings. Jeffery, a London bookseller, had Fox's History of King James II. bound in fox-skin; and books have been more than once bound in human skin. The edges of books are often ornamented with paintings, &c., and marginal decoration is frequently an element of considerable value. Another method of gratifying the bibliomanist taste is that of enriching works by the addition of engravings—illustrative of the text of the book—and of preparing only single copies.

Bicanere. See *Bikaner*.

Bicarbonate, a carbonate derived from carbonic acid (H_2CO_3) by replacing one of the atoms of hydrogen by a metal. Bicarbonate of sodium ($NaHCO_3$) is used as an ant-acid, and effervescing liquors are usually produced by mixing it with tartaric acid. It is also the chief ingredient of baking-powder.

Bice, the name of two colours used in painting, one blue the other green, and both native carbonates of copper, though inferior kinds are also prepared artificially.

Bi'ceps, the large muscle in front of the upper arm. See *Arm*.

Bicêtre (bē-sātr), a village of France, s.w. of Paris, with a famous hospital for old men and an asylum for lunatics, together forming one vast establishment. The neat little articles of wood and bone fabricated by the inmates are known as *Bicêtre work*.

Bichat (bē-shä), MARIE FRANÇOIS XAVIER, French anatomist and physiologist, born at Thoirette, dep. of Ain, 1771, died 1802. He wrote *Traité des Membranes*, which was translated into almost all the languages of Europe, *Recherches sur la Vie et la Mort*, and *Anatomie Générale*—a complete treatise on anatomy and physiology. Bichat was the first who recognized the identity of the tissues in the different organs.

Bick'erstaff, ISAAC, dramatic writer, born in Ireland about 1735, died in obscurity on the Continent about 1812. He wrote many successful pieces for the stage, some of which are still popular, and was a friend of Gar-

rick, Boswell, &c.—In English literature the name *Isaac Bickerstaff* occurs as the name assumed by Swift in his controversy with Partridge, the almanac maker, and also as the pseudonym of Steele as editor of the *Tatler*.

Bick'ersteth, REV. EDWARD, clergyman of the Church of England, born 1786, died 1850. Was in business as a solicitor in Norwich for a time, but took orders and went to Africa in 1816 to reorganize the stations of the Church Missionary Society. Returning to England he was chosen secretary to that society. In 1830 he became rector of Watton in Hertford, and was one of the founders of the Evangelical Alliance. His publications, which had an immense circulation, included the *Christian Student*, *A Treatise on the Lord's Supper*, *A Treatise on Prayer*, *The Signs of the Times*, *The Restoration of the Jews*, *A Practical Guide to the Prophecies*, besides sermons and tracts without number.

Bicuiba (bē-kō-ē'bà), a Brazilian tree of the nutmeg genus (*Myristica officinālis*), whose fruits yield a fat or oil like nutmegs.

Bicycle, a light-wheeled vehicle propelled by the rider, consisting of two wheels attached to a frame composed of tubing. Between these is arranged an axle, attached to lower part of frame, to which are affixed two pedals, one on either side; to this axle is attached a sprocket-wheel over which runs an endless chain connecting with a smaller sprocket on the rear wheel. Quite recently a chainless bicycle has been devised, a system of cogs taking the place of the chain. The frames are distinguished as "diamond" and "drop;" the former used by men, the latter by women cyclists. The rider sits upon a saddle attached to a seat-post affixed to the frame; he there steers the machine by means of a handle-bar, which turns the front wheel in any direction required. The momentum of the vehicle, the action of the rider's body and the proper use of the handle or steering bar keeps it in an upright position.

Bidasso'a, a river of North-eastern Spain, forming for some distance the boundary between France and Spain. In 1813 Wellington effected the passage of the Bidassoa and entered France.

Biddeford (bid'e-ford), a thriving town, United States, Maine, on the Saco, opposite to the town of Saco, with which it is connected by several bridges. The river falls,

42 feet high, afford valuable water-power. Pop. 1890, 14,443.

Bid'dery. See *Bidery*.

Biddle, JOHN, father of the modern Unitarians, born in 1615 at Wotton-under-Edge, in Gloucestershire, died in prison 1662. He was educated at Oxford, and became master of a free-school at Gloucester. He was repeatedly imprisoned for his anti-Trinitarian views, and the Westminster Assembly of Divines having got parliament to decree the punishment of death against those who should impugn the established opinions respecting the Trinity were eager for his punishment, but the act was not put in force. A general act of oblivion in 1652 restored him to liberty, when he immediately disseminated his opinions both by preaching and by the publication of his *Twofold Scripture Catechism*. He was again imprisoned, and the law of 1648 was to be put in operation against him when, to save his life, Cromwell banished him to St. Mary's Castle, Scilly, and assigned him a hundred crowns annually. Here he remained three years, until the Protector liberated him in 1658. He then continued to preach his opinions till the death of Cromwell, and also after the Restoration, when he was committed to jail in 1662, and died a few months after. He wrote *Twelve Arguments against the Deity of the Holy Spirit*; *Confession of Faith concerning the Holy Trinity*; &c.

Bideford (bid'e-ford), a munic. bor. and seaport, England, county Devon, 44 miles N. of Plymouth, picturesquely situated on both sides of the Torridge, 4 miles from the sea. Its industries embrace coarse earthenware, ropes, sails, &c. Its shipping trade was formerly large, but is not now of much importance. Pop. 1891, 7908.

Bid'ery (from *Bidar*, a town in India), an alloy, primarily composed of copper, lead, tin, to every 3 oz. of which 16 oz. of spelter (zinc) are added. Many articles of Indian manufacture, remarkable for elegance of form and gracefully-engraved patterns, are made of it. It is said not to rust, to yield little to the hammer, and to break only when violently beaten. Articles formed from it are generally inlaid with silver or gold and polished.

Bidpai (bid'pī), or PILPAI (pil'pī), the reputed author of a very ancient and popular collection of Eastern fables. The original source of these stories is the old Indian collection of fables called *Panchatantra*,

which acquired its present form under Buddhist influences not earlier than the second century B.C. It was afterwards spread over all India and handed down from age to age in various more or less different versions. An abridgment of this collection is known as the *Hitopadesa*. The *Panchatantra* was translated into Pehlevi in the sixth century of our era. This translation was itself the basis of a translation into Arabic made in the eighth century; and this latter translation—in which the author is first called *Bidpai*, the chief of Indian philosophers—is the medium by which these fables have been introduced into the languages of the West. The first English translation was published in 1570.

Biebrich (bē'brih), a town of Prussia, district Wiesbaden, on the right bank of the Rhine, with a fine castle, formerly the residence of the dukes of Nassau. Pop. 9669.

Biel (bēl). See *Bienne*.

Biela's (bē'la) **Comet**, discovered by M. Biela (1782–1856), an Austrian officer, in 1826. Its periodic time was determined as 6 years 38 weeks. It returned in 1832, 1839, 1846, and 1852. On the latter two occasions it was in two parts, each having a distinct nucleus and tail. It has not since been seen as a comet; but in 1872, 1879, and 1885, when the earth passed through the comet's track, immense flights of meteors were seen, which have been connected with the broken-up and dispersed comet.

Bielef (bye-lef'), a town in Russia, government of Tula, with manufactures of soap, leather, &c., and a considerable trade. Pop. 8123.

Bielefeld (bē'le-felt), a town of Prussia, in the province of Westphalia, 38 miles E. from Münster; one of the chief places in Germany for flax-spinning and linen manufacture. Pop. 34,931.

Bielgorod (byel'go-rod), a town, Russia, government of, and 76 miles S. from the town of Kursk, on the Donetz. It is the seat of an archbishop's see, and has important fairs. Pop. 15,200.

Bielitz (bē'lits), a town, Austrian Silesia, 42 miles W.S.W. of Cracow, on the Biala, which divides Silesia from Galicia, with manufactures of woollens and linens, dye-works and print-fields. Pop. 13,060.

Biella (bē-el'là), a town of North Italy, province of Novara, 36 miles N.N.E. of Turin, the seat of a bishop. It has manufactures of woollen and linen cloth. Pop. 15,000.

Bielo-Ozero (byā-lo-o-zā'ro; 'white lake,' from its white clay bottom), a Russian lake, government of Novgorod, 25 miles long by 20 broad. Its surplus waters are conveyed to the Volga by the river Sheksna.

Bielopol (byā'lo-pol), a Russian town, government of Kharkov. Pop. upwards of 12,000.

Bielsk (byelsk), a town of Russia, gov. of Grodno. Pop. 10,000.

Bielzy (byel'tsi), town of Russia, prov. Bessarabia. Pop. 7000.

Bienhoa (bi-en-hwä'), a town in Cochinchina, capital of a province of the same name, 20 miles N.W. of Saigon. Taken by the French in 1861, now one of their fortified posts.

Bien'nial, a plant that requires two seasons to come to maturity, bearing fruit and dying the second year, as the turnip, carrot, wallflower, &c.

Bienne (bi-ān), or **BIEL**, a town, Switzerland, canton of Bern, 16 miles N.W. of Bern, beautifully situated at the N. end of the lake of same name, and at the foot of the Jura. Pop. 11,623.—The **LAKE** is about 10 miles long by 3 broad. It receives the waters of Lake Neufchâtel by the Thiel and discharges itself into the Aar.

Bies-Bosch (bēs'bosk), a marshy sheet of water interspersed with islands, between the Dutch provinces of North Brabant and South Holland, formed in 1421 by an inundation which destroyed seventy-two villages and 100,000 people.

Bièvre (bi-ā-vr), **MARQUIS DE**, born 1747, died 1789; served in the corps of the French musketeers, was a life-guard of the King of France, and acquired much reputation by his puns and repartees. He is the author of several amusing publications, including *Le Séducteur*, a comedy in verse; an *Almanach des Calenbourgs* or collection of puns; and there is also a collection of his jests called *Bièvrina*.

Biffin, a variety of excellent kitchen apple, often sold in a dry and flattened state.

Bifröst (bif'roust), in northern mythology the name of the bridge represented as stretching between heaven and earth (*Asgard* and *Midgard*); really the rainbow.

Big Rapids, capital of Mecosta co., Mich., 65 miles N. of Grand Rapids; heavy lumbering trade, &c. Pop. 1890, 5303.

Big'amy, the act or state of having two (or more) wives or husbands at once, an offence by the laws of most states. By the law of England bigamy is a felony, punish-

able with penal servitude for any term not exceeding seven years and not less than three years, or imprisonment, with or without hard labour, not exceeding two years. If the party's wife or husband shall have been absent continuously for seven years and not known to be alive, the penalty is not incurred. The statutory provisions in the United States against bigamy are in general similar to and copied from the English statute, excepting as to the punishment, which differs in many of the States.

Bigg, a variety of barley, four-rowed, suitable for cultivation in more northerly localities.

Biggleswade, a town in England, county Bedford, giving name to a parl. div. of the county; manufactures of straw-plait. Pop. 4244.

Big Horn, a river of the United States in Wyoming and Montana, the largest tributary of the Yellowstone.

Big-horn, the *Haplocœrus montānus* or wild sheep of the Rocky Mountains, named from the size of its horns, which are $3\frac{1}{2}$ feet long, the animal itself being of the same height at the shoulder. The big-horns are gregarious, going in herds of twenty or thirty, frequenting the craggiest and most inaccessible rocks, and are wild and untamable. It is called also Rocky Mountain goat.

Bigno'nia, a genus of plants of many species, inhabitants of hot climates, nat. order Bignoniaceæ, usually climbing shrubs furnished with tendrils; flowers mostly in terminal or axillary panicles; corolla trumpet-shaped, hence the name of *trumpet-flower* commonly given to these plants. All the species are splendid plants when in blossom, and many of them are cultivated in our gardens. *B. Leucoxydon*, a native of Jamaica, is a tree 40 feet high; the leaves of *B. Chica* yield a red colouring matter, with which the Indians paint their bodies; *B. radicans*, or *Tecōma radicans*, is a much-admired species.

Bihacs (bē-häch'), or BIHATCH, a town and fortress in Bosnia, the possession of which has often been contested during the Turkish wars. Pop. 3000.

Bijapur. See *Bejapoor*.

Bijāyanagar, an ancient and celebrated city of Hindustan, now in ruins, in the Bombay presidency, 30 miles n.w. of Bel-lary. It contains the remains of several magnificent temples, specimens of the purest style of Hindoo architecture.

Bijnaur', town of Hindustan, North-western Provinces, 3 miles from the Ganges. Pop. 15,147.

Bikaner', a native state of Rājputāna, India, under the superintendence of a political agent and the governor-general's agent for Rājputāna, lying between $27^{\circ} 12'$ and $30^{\circ} 12'$ N. lat. and $72^{\circ} 15'$ and $73^{\circ} 50'$ E. long. Area, 22,340 sq. miles; pop. 509,023. —BIKANER, the capital, is surrounded by a fine wall $3\frac{1}{2}$ miles in circuit. It has a fort, containing the rajah's palace, is irregularly built, but with many good houses, and manufactures blankets, sugar-candy, pottery, &c. Pop. including suburbs, 43,283.

Ei'lander, a small trading vessel with two masts, having a fore and aft mainsail (on the after mast) bent to a yard that is inclined at an angle of about 45° , manageable by four or five men, and used chiefly in the canals of the Low Countries.

Bilaspur (bi-läs-pör'), a district in the chief commissionership of the Central Provinces of India, lying between $21^{\circ} 22'$ and $23^{\circ} 6'$ N. lat., and between $80^{\circ} 48'$ and $83^{\circ} 10'$ E. long. Area, 7798 sq. miles; pop. 1,017,327. The administrative headquarters of the district are at Bilaspur, which is also the principal town. It is pleasantly situated on the south bank of the Arpa, and has a population of 7775.

Bilba'o, a city in Northern Spain, capital of the province of Biscay or Bilbao, on the navigable Nervion, 8 miles from the sea. It has a cathedral and several convents; also manufactures of hardware, earthenware, leather, and paper, and possesses large ship-yards and iron-foundries. It exports large quantities of iron ore. Pop. 50,772.

Bilberry. See *Whortleberry*.

Bilboes (bil'bōz), an apparatus for confining the feet of offenders, especially on board



Bilboes, from the Tower of London.

ships, consisting of a long bar of iron with shackles sliding on it and a lock at one end to keep them from getting off, offenders being thus 'put in irons.'

Bilderdijsk (bil'dér-dik), WILLEM, an eminent Dutch poet, born 1756, died 1831. He studied at Leyden, and cultivated poetry while practising as an advocate at the Hague. On the invasion of the Netherlands by the French he left his country and

lived abroad for many years, part of the time in London, where he delivered, in the French language, lectures on literature and poetry. He returned to Holland in 1799, and soon afterwards published some of his principal works, many of which are translations or imitations. Of his own compositions the principal are *Rural Life*, *The Love of Fatherland*, *The Maladies of Scholars*, *The Destruction of the First World*, &c. When Napoleon returned from Elba Bilterdijk produced a number of war-songs, which are considered among the best in Dutch poetry. He also wrote a treatise on Geology, a History of Holland, in 10 vols., &c.

Bile, a yellow bitter liquor, separated from the blood by the primary cells of the liver, and collected by the biliary ducts, which unite to form the hepatic duct, whence it passes into the duodenum, or by the cystic duct into the gall-bladder to be retained there till required for use. The most obvious use of the bile in the animal economy is to aid in the digestion of fatty substances and to convert the chyme into chyle. It appears also to aid in exciting the peristaltic action of the intestines. The natural colour of the fæces seems to be owing to the presence of bile. The chemical composition varies with the animal which yields it, but every kind contains two essential constituents, the bile salts and the bile colouring matter associated with small quantities of cholesterine, fats, and certain mineral salts, chiefly chloride of sodium, phosphates, and iron. Some of the constituents of the bile return into the blood by absorption, the colouring matters and cholesterine being the principal excrementitious substances. When bile is not secreted in due quantity from the blood the unhealthy condition of biliousness results.

Biled-ul-gerid ('land of dates'), a tract of North Africa, lying between the s. declivity of Atlas and the Great Desert, noted for the production of date palms.

Bilge, the breadth of a ship's bottom, or that part of her floor which approaches to a horizontal direction, on which she would rest if aground.—*Bilge-water*, water which enters a ship and lies upon her bilge or bottom; when not drawn off it becomes dirty and offensive.—*Bilge ways*, planks of timber placed under a vessel's bilge on the building-slip to support her while launching.

Bil'iary Cal'culus, a concretion which

forms in the gall-bladder or bile-ducts; gall-stone. It is generally composed of a peculiar crystalline fatty matter which has been called *cholesterine*.

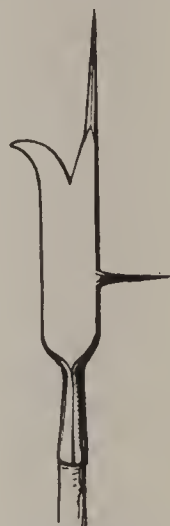
Bilin', a town, Bohemia, 42 miles N.W. Prague, prettily situated in the vale of the Bila, and celebrated for its mineral waters, which are drunk on the spot and largely exported, being useful in cases of rheumatism, stone, scrofula, Bright's disease, &c. Pop. 5000.

Biliton'. See *Billiton*.

Bill, a cutting instrument hook-shaped towards the point, or with a concave cutting edge; used by plumbers, basket-makers, gardeners, &c., made in various forms and fitted with a handle. Such instruments, when used by gardeners for pruning hedges, trees, &c., are called *hedge-bills* or *bill-hooks*. Also an ancient military weapon, consisting of a broad hook-shaped blade, having a short pike at the back and another at the summit, attached to a long handle, used by the English infantry especially in defending themselves against cavalry down to the fifteenth century, and by civic guards or watchmen down to the end of the seventeenth.

Bill, a written or printed paper containing a statement of any particulars. In common use a tradesman's account, or a printed proclamation or advertisement, is thus called a bill. In legislation a bill is a draft of a proposed statute submitted to a legislative assembly for approval, but not yet enacted or passed and made law. When the bill has passed and received the necessary assent, it becomes an act. See *Parliament*.

Bill of Attainder and of *Pains and Penalties* are forms of procedure in the British Parliament which were often resorted to in times of political agitation to procure the criminal condemnation of an individual. The person attainted lost all civil rights, he could have no heir, nor could he succeed to any ancestor, his estate falling to the crown. These bills were promoted by the crown, or the dominant party in Parliament, when any individual obnoxious to them could not readily be reached by the ordinary forms of procedure. Parliament being the highest court of the kingdom could dispense



O'd English Bill,
time of Elizabeth.

BILL.

with the ordinary laws of evidence, and even, if actuated by passion or servilely devoted to the authorities, condemn the accused in the most arbitrary manner. They were very common under the Tudors, and as late as 1820 the trial of Queen Caroline took place under a bill of pains and penalties. Bills of attainder are prohibited by the constitution of the United States.

Bill of Costs is an account rendered by an attorney or solicitor of his charges and disbursements in an action, or in the conduct of his client's business.

Bill of Entry, a written account of goods entered at the custom-house.

Bill of Exchange (including *promissory notes* and *inland bills* or *acceptances*). A bill of exchange is defined as an order in writing addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay on demand or at a fixed or determinable future time a certain sum of money to or to the order of a specified person or to bearer. Bills of exchange are divided into foreign and inland bills, but in mercantile usage the term bill of exchange is seldom applied to other than foreign bills. An inland bill of exchange, generally called a bill of acceptance, has more in common with a promissory note than with a foreign bill of exchange. We give the common forms of the three documents.

(1) *Promissory Note.*

\$110.00.

Philadelphia, 1st January, 1893.

Three months after date I promise to pay to the order of W. S. [or 'to W. S. or his order'] the sum of One Hundred and Ten Dollars, for value received. (Signed) J. D.

(2) *Inland Bill of Acceptance.*

\$110.00.

Philadelphia, 1st January, 1893.

Three months after date pay to our order [or 'to the order of W. S.'] the sum of One Hundred and Ten Dollars, for value received. (Signed) F. G. & Co.

To Messrs. A. B. & Co., New York.

This form is accepted by writing across the body of the bill :—

'Accepted,
A. B. & Co.'

(3) *Foreign Bill of Exchange.*

\$110.00.

Lima, 1st January, 1893.

At sixty days' sight of this first of exchange (second and third of same tenor and date unpaid)

pay to the order of W. S. the sum of One Hundred and Ten Dollars, value as advised [or, 'which charge to our account,' or 'to account of——as advised.'](Signed) F. & Co.

To F. B. & Co., Liverpool.

(Second and third drawn in same form as the first, one only of the set being negotiable. Instead of three copies being used, which is called drawing a bill in parts, one only may be drawn, the form then used being 'this sola of exchange.')

The acceptor of this bill writes across it the date on which it is presented, together with his signature, thus:—

'Accepted, 4th Feb., 1893.
F. B. & Co.'

The person who makes or draws the bill is called the *drawer*, he to whom it is addressed is, before acceptance, the *drawee*, and after accepting it, the *acceptor*; the person in whose favour it is drawn is the *payee*; if he endorse the bill to another, he is called the *endorser*, and the person to whom it is thus assigned is the *endorsee* or *holder*. A bill when properly stamped is negotiable, and may be discounted at a bank, or may pass from hand to hand by the process of endorsement; many names being frequently attached to one bill as endorsers, each of whom is liable to be sued upon the bill if it be not paid in due time. The value of the stamp required in Britain is 1d. for £5, rising at fixed stages with the value of the bill at the rate of 1s. per £100. The last phase in the negotiation of a bill is usually its being discounted with a banker. The merchant may either discount it with a bill-broker, who re-discounts it with the banker, or he may take it direct to the banker. The broker or banker deducts (as do also the previous negotiators of a bill) a discount, or equivalent for the use of the money he pays until the due date of the bill, when he expects it will be repaid him. There is usually a current rate of discount for first-class bills, which is determined in Great Britain by the rates of the Bank of England. When a bill reached the date of payment, and was not duly paid, it used to be *noted* or *protested*, but this is now only done with foreign bills. *Protesting* is a legal form, in which the payee is declared responsible for all consequences of the non-payment of the bill. *Noting* is a temporary form, used as a preliminary to protesting. It consists in a record by a notary-public of the presentation of the bill, and of the refusal of the payee to honour it. Unless a bill is noted for non-payment on the due date, the en-

dorsers are freed from responsibility to pay it. In determining the due date of a bill, a legal allowance, varying in different countries, called *days of grace*, has to be taken into account. In Great Britain three days of grace are allowed on all bills indiscriminately, except bills drawn on demand. A bill of exchange drawn and accepted merely to raise money on, and not given, like a genuine bill of exchange, in payment of a debt, is called an *accommodation bill*. Different States in America have different laws respecting days of grace.

Bill of Rights and *Declaration of Rights*, two documents which constituted the convention by which the Prince and Princess of Orange were called to the throne of England, and are the basis of the conditions on which the crown of England is still held. The Declaration of Rights, afterwards embodied in the bill, first recited the illegal acts of King James; secondly, declared these acts to be illegal; and thirdly, declared that the throne should be filled by the Prince and Princess of Orange in accordance with the limitations of the prerogative thus prescribed. It contains the following specific declarations:—‘That the pretended power of suspending laws and the execution of laws, by regal authority without consent of Parliament, is illegal; That levying of money for or to the use of the crown by pretence of prerogative without grant of Parliament, is illegal; That it is the right of the subjects to petition the king; That the raising or keeping a standing army within the kingdom in time of peace, unless it be with consent of Parliament, is illegal; That elections of members of Parliament ought to be free; That the freedom of speech or debates on proceedings in Parliament ought not to be impeached or questioned in any court or place out of Parliament; And that, for redress of all grievances, and for the amending, strengthening, and preserving of the laws, parliaments ought to be held frequently. The Bill of Rights, passed in 1689, confirmed these declarations, settled the crown upon Protestants, and declared that any king or queen of England who should marry a Papist would be incapable of reigning in England, and the subjects absolved from allegiance.

Bill of Health, a certificate or instrument signed by consuls or other proper authorities, delivered to the masters of ships at the time of their clearing out from all ports or places suspected of being particularly

subject to infectious disorders, certifying the state of health at the time that such ships sailed.

Bill of Indictment, a written accusation submitted to a grand-jury. If the grand-jury think that the accusation is supported by probable evidence, they return it to the proper officer of the court endorsed with the words ‘a true bill,’ and thereupon the prisoner is said to stand indicted of the crime and bound to make answer to it. If the grand-jury do not think the accusation supported by probable evidence, they return it with the words ‘no bill,’ whereupon the prisoner may claim his discharge.

Bill of Lading, a memorandum of goods shipped on board a vessel, signed by the master of the vessel, who acknowledges the receipt of the goods and promises to deliver them in good condition at the place directed, dangers of the sea excepted. Bills of lading can be transferred by endorsement; the endorsement transfers all rights and liabilities under the bill of lading of the original holder or consignee.

Bill of Sale, a formal instrument for the conveyance or transfer of personal chattels, as household furniture, stock in a shop, shares of a ship. It is often given to a creditor in security for money borrowed, or obligation otherwise incurred, empowering the receiver to sell the goods if the money is not repaid with interest at the appointed time, or the obligation not otherwise discharged.

Billaud-Varenne (bi-yō-vā-rān), JACQUES-NICOLAS, a noted French revolutionist, was born at Rochelle 1756, died in Hayti 1819; he bore a principal part in the murders and massacres which followed the destruction of the Bastille; voted immediate death to Louis XVI.; and officiated as president of the Convention in Oct. 1793. In 1795, on a reaction having taken place against the ultra party, he was arrested and banished to Cayenne.

Bill-broker, a financial agent or money-dealer, who discounts or negotiates bills of exchange, promissory-notes, &c.

Bill-chamber, a department of the Court of Session in Scotland, in which one of the judges officiates at all times during session and vacation. All proceedings for summary remedies, or for protection against impending proceedings, commence in the bill-chamber, such as interdicts. The process of sequestration or bankruptcy also issues from this department of the court.

Bil'leting, a mode of feeding and lodging soldiers when they are not in camp or barracks by quartering them on the inhabitants of a town. The necessity for billeting occurs chiefly during movements of the troops or when any accidental occasion arises for quartering soldiers in a town which has not sufficient barrack accommodation. The billeting of soldiers on private householders is now abandoned in Britain, but all keepers of inns, livery-stables, ale-houses, victualling houses, and similar establishments, are liable to receive officers and soldiers billeted on them.

Billet-moulding, an ornament common in Norman architecture, consisting of an imitation of billets, or round pieces of wood, placed in a hollow moulding with an interval between each usually equal to their own length.

Bill-fish, the gar-pike or long-nose l gar (*Lepidostœus ossœus*), a fish common in the lakes and rivers of the U. States; but the name is also given to other fishes.

Bill-hook. See *Bill* (cutting instrument).

Billiards (bil'yêrdz), a well-known game, probably (like its name) of French origin, played with ivory balls on a flat table. Various modes of play, constituting many distinct games, are adopted, according to the tastes of the players, some being more in favour in one country, some in another. The common English billiard-table is an oblong, about 12 feet by 6, covered with fine and very smooth green cloth, on a perfectly level bed of slate, and having a raised edge all round lined with cushions which are made tolerably firm and elastic, much of the skill of the game consisting in calculating the rebound of the balls in various directions from the cushions. Along the edges of the table are six semicircular holes arranged at regular intervals in the cushion, through which the balls are allowed to drop into small nets called pockets, under the sides of the table. The pockets are placed one at each corner of the table, and two opposite each other in the middle of the long sides. Each player is provided with a *cue* to strike the balls. The cue is a wooden rod from 4 or 5 to 6 or 8 feet long, rounded in form, and tapering gradually from 1½ inch in diameter at the butt to ¾ inch or less at the point, which is tipped with leather and rubbed with chalk to make the stroke smooth. In the common game two players engage. Each has a white ball, and a red ball is common to the two. In beginning

the game the red ball is placed on a spot near one end of the table, and equidistant from the corner pockets. A line drawn across the table at the other end marks off a space called *baulk*. In this space a semi-circle is described, out of which the player, in commencing, must send his ball, either striking the red or giving his opponent a 'miss,' that is, playing without striking the red ball, which scores one against him. When the game has commenced the player is at liberty to strike at either his opponent's ball or the red, and continues to play as long as he succeeds in scoring. The whole of an uninterrupted run of play is called a *break*. There are various modes of scoring. When a player strikes both balls with his own it is called a *cannon*, and counts two; when he pockets his own ball, after striking another, it is called a *losing hazard*, and counts two if made off his opponent's ball, three if off the red; when he pockets his opponent's ball it counts two; when he pockets the red, three. When the player fails to strike either ball, it scores one against him; if he goes into a pocket without striking, it scores three against him. After the ordinary game the most favourite varieties are *pyramids* and *pool*. The former is so called from the position in which the balls are placed at the beginning of the game. It is played with fifteen balls; and the object of the players is to try who will pocket, or 'pot,' the greatest number of balls. Pool is also a game of 'potting,' but is played somewhat differently. It is a favourite game with those who play for stakes, inso-much that it may be considered almost exclusively a gambling game. It embraces an indefinite number of players, each of whom is provided with a ball of a different colour from any of the others. They play in succession, and each tries to pot his opponent's ball. If he succeeds with one he goes on to the next; if he fails another player takes his turn, playing first on the ball of the last player. There are thus two points which a pool-player has to aim at: to pot as many balls as possible, and to keep his ball in a safe position relatively to that of the following player, as the player whose ball is potted has to pay the penalty prescribed by the game.

The common billiard-table used in France is smaller than the English, and has no pockets, the game being entirely a cannon game. This kind of table is now very common in America, and there a four-pocket

table is also in use. The American term for cannon is 'carom,' and in American play two red balls (or a red and a pink), and two white ones, are commonly employed.

Bil'lingsgate, the principal fish-market of London, on the left bank of the Thames, a little below London Bridge. It has been frequently improved, and was rebuilt in 1852 and again in 1874-76. From the character, real or supposed, of the Billingsgate fish-dealers, the term *Billingsgate* is applied generally to coarse and violent language.

Bil'lington, ELIZABETH, the most distinguished female singer of her day in England, born about 1768 in London, died in Italy in 1818. Her mother was an English vocalist, her father a Saxon musician named Weichsel. She appeared as a singer at the age of fourteen, and at sixteen married Mr. Billington, a double-bass player. She made her *début* as an operatic singer in Dublin, and afterwards appeared at Covent Garden. She visited France and Italy, and Bianchi composed the opera of Inez de Castro expressly for her performance at Naples. In 1802-11 she sang in Italian opera in London, and having amassed a handsome fortune she retired from the stage in 1811. Her private character was the cause of much scandal.

Bil'lion, in Britain and Germany the designation for a million of millions; among the French and in America a thousand millions. A similar difference of usage exists in regard to *trillion*, *quadrillion*, &c.

Billiton', a Dutch East Indian island between Banca and the s.w. of Borneo, of an irregular sub-quadrangular form, about 40 miles across. It produces iron and tin, and exports sago, cocoa-nuts, pepper, tortoise-shell, trepang, edible birds'-nests, &c. It was ceded to the British in 1812 by the Sultan of Palembang, but in 1824 it was given up to the Dutch. Pop. 1890, 38,779.

Bil'lon, an alloy of copper and silver, in which the former predominates, used in some countries for coins of low value, the object being to avoid the bulkiness of pure copper coin.

Billy-boy, a fiat-bottomed, bluff-bowed vessel, rigged as a sloop, with a mast that can be lowered so as to admit of passing under bridges.

Bilma, an oasis of the Sahara about half way between Fezzan and Bornu, producing much salt.

Bilsa. See *Bhilsa*.

Bil'ston, a town, England, in Stafford-

shire, forming part of the parliamentary borough of Wolverhampton; it has extensive manufactories of hardware. Pop. 23,453.

Bi'mana, animals having two hands: a term applied by Cuvier to the highest order of Mammalia, of which man is the type and sole genus. By some naturalists man is classified as a sub-division of the order Primates, which includes also the apes, monkeys, and lemurs.

Bimet'allism, that system of coinage which recognizes coins of two metals (silver and gold) as legal tender to any amount; or in other words, the concurrent use of coins of two metals as a circulating medium, the ratio of value between the two being arbitrarily fixed by law. It is contended by advocates of the system that by fixing a legal ratio between the value of gold and silver, and using both as legal tender, fluctuations in the value of the metals are avoided, whilst the prices of commodities are rendered steadier.

Bim'lipatam, a seaport of India, Madras Presidency, with a brisk trade. Pop. 8582.

Binab', a town, Persia, pleasantly situated in the midst of orchards and vineyards, 55 miles s.s.w. from Tabreez, and 8 miles E. of Lake Urumiya. Pop. about 7500.

Binary, twofold; double.—*Binary compound*, in chemistry, a compound of two elements, or of an element and a compound performing the function of an element, or of two compounds performing the function of elements, according to the laws of combination. The term is now little used.—*Binary theory of salts*, the theory which regarded all salts as being made up of two oxides, an acid oxide and a basic oxide; thus sodium carbonate as made up of soda (Na_2O) and carbon dioxide (CO_2).—*Binary star*, a double star whose members revolve round a common centre of gravity.

Binche (bansh), town of Belgium, prov. Hainaut, with manufactures of lace, pottery, &c. Pop. 9441.

Bindrabund. See *Brindaban*.

Bind-weed, the common name for plants of the genus *Convolvulus*, especially of *C. arvensis*, and also of plants of the allied genus *Calystegia*, especially *C. Soldanella* and *C. sepium*. The black bryony is called *black bind-weed*; *Smilax* is called *rough bind-weed*. *Solanum Dulcamāra* (the bitter-sweet) is the *blue bind-weed* of Ben Jonson.

Bing'en, a town of Germany, in Hesse-Darmstadt, on the left bank of the Rhine,

in a district producing excellent wines. The Mäusethurm or Mouse-tower in the middle of the river is the scene of the well-known legend of Bishop Hatto. Pop. 7215.

Bing'ham, JOSEPH, English writer, born in 1668, died 1723; distinguished himself as a student at Oxford, and devoted his attention particularly to ecclesiastical antiquities. He was compelled to leave the university for alleged heterodoxy, but was presented to the living of Headbourn-Worthy, near Winchester, and afterwards to that of Havant, near Portsmouth. His great work, *Origines Ecclesiasticæ*, or *Antiquities of the Christian Church*, in 10 vols., was published 1708-1722.

Bing'hamton, a town, United States, state of New York, at the junction of the Chenango and Susquehanna rivers, with numerous manufactures and an extensive flour and lumber trade. Pop. 35,005.

Bing'ley, a market town, W. Riding of Yorkshire, 15 miles W.N.W. of Leeds, with considerable manufactures of worsted, cotton, paper, and iron. Pop. 19,284.

Bingley, WARD, the Garrick of the Dutch stage, was born at Rotterdam in 1755, of English parents; died at the Hague 1818; In 1799 he made his *début* on the stage of Amsterdam, and almost from the first took his place at the head of his profession, not only in the Dutch theatres, but also in those which performed French plays in Amsterdam and the Hague.

Bin'nacle, or BITTACLE, a case or box on the deck of a vessel near the steering apparatus, containing the compass and lights by which it can be read at night.

Bin'ney, HORACE, LL.D., born in Philadelphia in 1780, died in 1875, was a prominent lawyer, for many years leader of the Pennsylvania bar. He was a member of Congress from 1833 to 1835.

Binney, REV. THOMAS, D. D., LL. D., popular Independent preacher, theologian, and controversialist, born at Newcastle-on-Tyne 1798, died 1874; a voluminous writer.

Binoc'ular, a field-glass or opera-glass, or a microscope suited for viewing objects with both eyes at once.

Bino'mial, in algebra, a quantity consisting of two terms or members, connected by the sign + or -. The *binomial theorem*, is the celebrated theorem given by Sir Isaac Newton for raising a binomial to any power, or for extracting any root of it by an approximating infinite series.

Bin'tang, an island of the Dutch East

Indies, at the s. extremity of the Malay Peninsula; area 450 sq. miles; yields catechu and pepper.

Bin'turong (*Arctictis binturong*), a carnivorous animal of the civet family, with a prehensile tail, a native of the Eastern Archipelago.

Binue (bin'-u-e). See *Benue*.

Bi'obio, a Chilean river, rises in Lake Huchueltui, flows in a N.W. direction for 180 miles, and fall into the Pacific at the city of Concepcion. It gives name to a province of the country, with 100,000 inhabitants; area 4158 sq. miles.

Biogen'esis, the history of life development generally; specifically, that department of biological science which speculates on the mode by which new species have been introduced; often restricted to that view which holds that living organisms can spring only from living parents.

Biog'raphy, that department of literature which treats of the individual lives of men or women; and also, a prose narrative detailing the history and unfolding the character of an individual written by another. When written by the individual whose history is told it is called an *autobiography*. This species of writing is as old as literature itself. In the first century after Christ Plutarch wrote his *Parallel Lives*; Cornelius Nepos, the *Lives of Military Commanders*; and Suetonius, the *Lives of the Twelve Cæsars*. Modern biographical literature may be considered to date from the seventeenth century, since which time individual biographies have multiplied enormously. Dictionaries of biography have proved extremely useful, Moréri's *Dictionnaire Historique et Critique*, 1671, being perhaps the first of this class. During the present century have been published the *Biographie Universelle*, 85 vols., 1811-62; *Nouvelle Biographie Générale*, 46 vols., 1852-66; Chalmers's *General Biographical Dictionary*, 32 vols., 1812-17; Rose's *Biographical Dictionary*, 12 vols., 1848-50; Leslie Stephen's *Dictionary of National Biography*, to be completed in about 50 volumes, the first of which appeared in January, 1885; and Appleton's *Cyclopædia of American Biography*, 6 vols. (1887-1889).

Biol'ogy, a comprehensive term for those departments of science that treat of living beings, including under this head both animals and plants. It therefore comprehends both botany and zoology in all their branches and details.

Bi'on, born in Smyrna, or in its neighbourhood; an ancient Greek pastoral poet, flourished about 280 B.C. He wrote bucolic and erotic poems, fragments of which are extant. He is supposed to have spent the last years of his life in Sicily, where he was poisoned.

Bi'oplasm. See *Protoplasm*.

Biot (bē-ō), JEAN BAPTISTE, French mathematician and physicist, born at Paris 1774, and died there 1862. He became professor of physics in the Collège de France in 1800, in 1803 member of the Academy of Sciences, in 1804 was appointed to the Observatory of Paris, in 1806 was made member of the Bureau des Longitudes, in 1809 became also professor of physical astronomy in the University of Paris. In connection with the measurement of a degree of the meridian he visited Britain in 1817. He is especially celebrated as the discoverer of the circular polarization of light. Besides numerous memoirs contributed to the Academy and to scientific journals, he wrote *Essai de Géométrie Analytique*; *Traité de Physique Expérimentale et Mathématique*; and *Traité Élémentaire de Physique Expérimentale*, as well as works on the astronomy of the ancient Egyptians, Indians, and Chinese.—His son, EDOUARD CONSTANT (born 1803, died 1850), was an eminent Chinese scholar.

Bi'ped, an animal having two feet, applied to man and birds, indicating their mode of progression rather than the mere possession of two limbs.

Bipen'nis, a double-headed axe, the weapon usually seen depicted in the hands of the Amazons in ancient works of art.

Bi'pont (or BIPONTINE) Editions, famous editions of the classic authors, printed at Zweibrücken (Fr. *Deux Ponts*, L. *Bipontium*), in the Rhenish Palatinate. The collection forms 50 vols. 8vo, begun in 1779 and finished at Strasburg.

Biquadrat'ic Equation, in algebra, an equation raised to the fourth power, or where the unknown quantity of one of the terms has four dimensions. An equation of this kind, when complete, is of the form $x^4 + Ax^3 + Bx^2 + Cx + D = 0$, where A, B, C, and D denote any known quantities whatever.

Bir, or BIREH-JIK, a town, Asiatic Turkey, 62 miles N.E. Aleppo, on the Euphrates, at the point where the great caravan route from Syria to Bagdad crosses the river. Pop. 5000 to 6000.

Birague (bē-räg), RENÉ DE, born at Milan 1507, died 1583. He sought an asylum in France from the hostility of Louis Sforza, and became a cardinal and chancellor of France. He was a party in the secret council at which the massacre of St. Bartholomew was organized; and he was generally believed to have repeatedly employed poison to rid himself and his patroness, Catharine de' Medici, of persons who stood in their way.

Birbhúm, or BEERBHOOM, a district of British India, in the Bardwán Division, lieutenant-governorship of Bengal; area, 1756 sq. miles; pop. 794,428. Chief manufactures, silk and lacquered wares.

Birch (*Betŭla*), a genus of trees, order Betulaceæ, which comprises only the birches and alders, which inhabit Europe, Northern Asia, and North America. The common birch is indigenous throughout the north, and on high situations in the south of Europe. It is extremely hardy, and only one or two other species of trees approach so near to the north pole. There are two varieties natives of Britain, *Betŭla alba*, and *B. alba pendŭla*, or weeping-birch, the latter a very beautiful tree. The wood of the birch, which is light in colour, and firm and tough in texture, is used for chairs, tables, bedsteads, and the woodwork of furniture generally, also for fish-cases and hoops, and for smoking hams and herrings, as well as for many small articles. In France wooden shoes are made of it. The bark is whitish in colour, smooth and shining, separable in thin sheets or layers. Fishing-nets and sails are steeped with it to preserve them. In some countries it is made into hats, shoes, boxes, &c. In Russia the oil extracted from it is used in the preparation of Russian leather, and imparts the well-known scent to it. In Lapland bread has been made from it. The sap, from the amount of sugar it contains, affords a kind of agreeable wine, which is produced by the tree being tapped during warm weather in the end of spring or beginning of summer, when the sap runs most copiously. The dwarf birch, *Betŭla nana*, a low shrub, two or three feet high at most, is a native of all the most northerly regions. *Betula lenta*, the cherry-birch of America, and the black birch (*B. nigra*) of the same country, produce valuable timber, as do other American species. The largest of these is the yellow birch (*B. lutĕa* or *excelsa*) which attains the height of 80 feet. It is named from its bark being of a rich yellow colour. The paper

birch of America (*B. papyracæa*) has a bark that may be readily divided into thin sheets almost like paper. From it the Indian bark canoes are made.

Birch, SAMUEL, D.C.L., LL.D., orientalist, born in London 1813, died 1885. He entered the British Museum as assistant-keeper of antiquities in 1836, and ultimately became keeper of the Egyptian and Assyrian antiquities. He was specially famed for his capacity and skill in Egyptology, and was associated with Baron Bunsen in his work on Egypt, contributing the philological portions relating to hieroglyphics. His principal works, besides numerous contributions to the transactions of learned societies, to encyclopædias, &c., include Gallery of Antiquities, 1842; Catalogue of Greek Vases, 1841; Introduction to the Study of Hieroglyphics, 1857; Ancient Pottery, 1858; Egypt from the Earliest Times, 1875. He edited Records of the Past, from 1873-80. He had the LL.D. degree from St. Andrews and Cambridge, D.C.L. from Oxford, besides many foreign academical distinctions.

Birch, THOMAS, an industrious historian and biographer, born in London in 1705, killed by a fall from his horse 1766. He took orders in the church in 1730, and obtained in 1732 a living in Essex. In 1734 he engaged with others in writing the General Historical and Critical Dictionary, founded on that of Bayle, and completed, in ten vols. fol., in 1741. He subsequently obtained various preferments in the church. Among his numerous works are Life of the Right Hon. Robert Boyle, 1744; Life of Archbishop Tillotson, 1752; Memoirs of the Reign of Queen Elizabeth, 1754; History of the Royal Society, 1757; &c. He was a friend and correspondent of Dr. Johnson.

Birch-Pfeiffer (*birh-pfi'fr*), CHARLOTTE, German dramatist and actress, born in Stuttgart 1800, died at Berlin 1868. She married Dr. Birch of Copenhagen in 1825, and obtained great success as a performer and an author. She was for some years manager of the Zurich theatre, and latterly of the Hoftheater in Berlin. She wrote several novels and some seventy plays.

Bird, EDWARD, R.A., an English painter, born at Wolverhampton 1772, died at Bristol 1819. He became an academician in 1815. He excelled in historical and genre subjects. Among his chief pictures are the Surrender of Calais, Death of Eli, and Field of Chevy Chase.

Bird-bolt, a short, thick, blunt arrow for shooting birds with a cross-bow.

Bird-call, an instrument for imitating the cry of birds in order to attract them so that they may be caught.

Bird-catching Spider, a name applied to gigantic spiders of the genera *Mygale* and *Epeira*, more especially to the *Mygale avicularia*, a native of Surinam and elsewhere which preys upon insects and small birds which it hunts for and pounces on. It is about two inches long, very hairy, and almost black; its feet when spread out occupy a surface of nearly a foot in diameter.

Bird-cherry, a species of cherry (*Prunus Padus*), a very ornamental tree in shrubberies from its purple bark, its bunches of white flowers, and its berries, which are successively green, red, and black. Its fruit is nauseous to the taste, but is greedily eaten by birds. The wood is much used for cabinet-work. It is common in the native woods of Sweden and Scotland.

Bird-lime, a viscous substance used for entangling birds so as to make them easily caught, twigs being for this purpose smeared with it at places where birds resort. It is prepared from holly-bark, being extracted by boiling; also from the viscid berries of the mistletoe.

Bird of Paradise, the name for members of a family of birds of splendid plumage allied to the crows, inhabiting New Guinea and the adjacent islands. The family includes eleven or twelve genera and a number of species, some of them remarkably beautiful. The largest species is over 2 feet in length. The king bird of paradise (*Paradisæa regia*) is possibly the most beautiful species, but is rare. It has a magnificent plume of feathers, of a delicate yellow colour, coming up from under the wings, and falling over the back like a jet of water. The feathers of the *P. major* and *P. minor* are those chiefly worn in plumes. These splendid ornaments are confined to the male bird.

Bird Pepper. See *Capsicum*.

Birds. See *Ornithology*.

Bird-seed, seed for feeding cage-birds, especially the seed of *Phalāris canariensis*, or canary-grass.

Bird's-eye, a name of germander speedwell (*Veronica chamædrys*).

Bird's-eye Limestone, a division of the lower Silurian rocks of North America, apparently equivalent to the Llandeilo Beds, so called from the dark circular markings which stud many portions of its mass, and

which have been referred to the impressions of a fucoid (*Phytopsis cellulosus*), others regarding them as the filled-up burrows of marine worms.

Bird's-eye Maple, curled maple, the wood of the sugar-maple when full of little knotty spots somewhat resembling birds' eyes, much used in cabinet-work.

Bird's-eye View, the representation of any scene as it would appear if seen from a considerable elevation right above.

Bird's-foot, a common name for several plants, especially papilionaceous plants of the genus *Ornithopus*, their legumes being articulated, cylindrical, and bent in like a claw.

Bird's-foot Trefoil, the popular name of *Lotus corniculatus*, and one or two other creeping leguminous plants common in Britain. The common bird's-foot trefoil is a common British plant, and is found in most parts of Europe as well as in Asia, North Africa and Australia, and is a useful pasture-plant.

Bird's-nest, a name popularly given to several plants, as *Monotropa uniflora*, Indian pipe or Bird's-nest, a yellowish-white plant, common in woods from Canada to Georgia and west to Illinois. *Monotropa Hypopitys*, a parasitic ericaceous plant growing on the roots of trees in fir woods, the leafless stalks of which resemble a nest of sticks; and *Asplenium Nidus*, from the manner in which the fronds grow, leaving a nest-like hollow in the centre.

Birds'-nests, EDIBLE, the nests of the salangane (*Collocalia fuciphaga*) and other species of swifts (or swiftlets) found in the Indian seas. They are particularly abundant in the larger islands of the Eastern Archipelago. The nest has the shape of a common swallow's nest, is found in caves, particularly on the sea-shore, and has the appearance of fibrous, imperfectly concocted isinglass. When procured before the eggs are laid the nests are of a waxy whiteness and are then esteemed most valuable; when the bird has laid her eggs they are of second quality; when the young are fledged and flown, of third quality. They appear to be composed of a mucilaginous substance secreted by special glands, and not, as was formerly thought, made from a glutinous marine fucus or sea-weed. The Chinese consider the nests as a great stimulant and tonic, and it is said that about 8½ millions of them are annually imported into Canton.

Birds of Passage, birds which migrate

with the season from a colder to a warmer, or from a warmer to a colder climate, divided into *summer birds of passage* and *winter birds of passage*. Such birds always breed in the country to which they resort in summer, *i.e.* in the colder of their homes. Among British summer birds of passage are the cuckoo, swallow, &c., which depart in autumn for a warmer climate; while in winter woodcocks, fieldfares, redwings, with many aquatic birds, as swans, geese, &c., regularly flock to Britain from the north. In America the robin is a familiar example. See *Migration of Animals*.

Birds of Prey, the Accipitres or Raptores, including vultures, eagles, hawks or falcons, buzzards, and owls.

Bird-spider. See *Bird-catching Spider*.

Bireme (bī'rēm), an ancient vessel with two banks or tiers of oars; *trireme*, one with three tiers; *quadrireme*, one with four; *quinquereme*, one with five.

Bi'ren, or BÍ'RON, ERNEST JOHN VON, Duke of Courland, born in 1687, died 1772; was the son of a landed proprietor. He gained the favour of Anna, duchess of Courland and niece of Peter the Great of Russia, and when she ascended the Russian throne (1730) Biren was loaded by her with honours, and introduced at the Russian court. He was made Duke of Courland in 1737, and continued a powerful favourite during her reign, freely indulging his hatred against the rivals of his ambition. He caused 11,000 persons to be put to death, and double that number to be exiled. On the death of Anna he became regent, but he was exiled to Siberia in 1741. On the accession of Elizabeth to the throne she permitted his return to Russia, and in 1763 the duchy of Courland was restored to him.

Biret'ta, BIRRETTA, BERET'TA, an ecclesiastical cap of a square shape with stiff sides and a tassel at top, usually black for priests, violet for bishops, and scarlet for cardinals.

Biria, town of India, N.W. Provinces; sugar-refineries. Pop. 9160.

Birkbeck, GEORGE, the founder of mechanics' institutes, born at Settle, Yorkshire, in 1776, died in London in 1841. He studied medicine at Edinburgh; was appointed to the chair of natural and experimental philosophy in the Andersonian Institute at Glasgow in 1799, where he successfully established a class for mechanics. In 1806 he settled as a physician in London, and founded the London Mechanics' Institute in 1822, now known as

the Birkbeck Literary and Scientific Institution.

Bir'kenfeld (-felt), an outlying principality belonging to Oldenburg, surrounded by the Rhenish districts of Coblenz and Treves: area 194 sq. m.; pop. 36,685. It has a market town of the same name.

Bir'kenhead, a parliamentary and municipal borough of England, in Cheshire, on the estuary of the Mersey, opposite Liverpool. It has commodious docks with a lineal quay space of over 9 miles, and a complete system of railway communication for the shipment of goods and direct coaling of steamers. The principal industries are ship-building and engineering. Its commerce is in all respects a branch of that of Liverpool. The communication with Liverpool is by large steamboats and by a railway tunnel under the bed of the Mersey $4\frac{1}{2}$ miles long including the approaches, 21 feet high, 26 feet wide, the roof being about 30 feet below the bed of the river; cost £1,250,000. The town returns one member to parliament. Pop. 1891, 99,184.

Birmingham, Jefferson county, Ala., and the most important seat of the iron industry in the South, is 95 miles N. N. W. of Montgomery, with foundries, mills, factories and machine shops; iron has developed its growth from 3000 in 1880 to 26,178 in 1890; its property is over \$35,000,000.

Bir'mingham, a great manufacturing city of England, situated on the small river Rea near its confluence with the Tame, in the N. W. of Warwickshire, with suburbs extending into Staffordshire and Worcestershire; 112 m. N. W. of London, and 97 S. E. of Liverpool. It is the principal seat of the hardware manufacture in Britain, producing metal articles of all kinds from pins to steam-engines. It manufactures fire-arms in great quantities, swords, jewelry, buttons, tools, steel-pens, locks, lamps, bedsteads, gas-fittings, sewing-machines, articles of papier-maché, railway-carriages, &c. The quantity of solid gold and silver plate manufactured is large, and the consumption of these metals in electroplating is very great. Japanning, glass manufacturing, and glass-staining or painting form important branches of industry, as also does the manufacture of chemicals. At Soho and Smethwick in the vicinity of the town are the famous works founded by Boulton and Watt, who there manufactured their first steam-engines, where gas was first used, plating perfected, and numerous novel applications tried and

experiments made. Among the public buildings are the Town Hall, a handsome building of the classic style, the Free Library, commenced in 1861, the central portion of which was burned down in 1879, when the irreplaceable Shakspeare library, and the collection of books, prints, &c., bearing on the antiquities of Warwickshire, were destroyed; the Midland Institute and Public Art Gallery, the Council House, &c. There are statues of the Prince Consort, James Watt, Sir Robert Peel, Lord Nelson, Dr. Priestley, Rowland Hill, Sir Josiah Mason, and others. The finest ecclesiastical building is the Roman Catholic cathedral, a noble Gothic structure. The principal educational establishments are Queen's College, providing instruction in medicine, classics, French, German, &c.; a Roman Catholic college (at Oscott); the Mason Scientific College, founded by Sir Josiah Mason, 1875, opened 1880, giving instruction in science, engineering, classics, &c.; the Free Grammar School; and a school of art and design. The Reform Act of 1832 made Birmingham a parliamentary borough with two members; the act of 1867 gave it a third; while the Redistribution Act of 1885 divided it into seven divisions, each sending one member to parliament. Birmingham is known to have existed in the reign of Alfred, in 872, and is mentioned in the Domesday Book (1086) by the name of *Bermengeham*. Another old name of the town is *Bromwy-cham*, a form still preserved very nearly in the local pronunciation *Brummagem*. It became a city by royal grant in 1888. In 1881 the pop. was 400,774; in 1891, 429,171.

Bir'nam, a hill in Perthshire, Scotland, 1324 feet high, once covered by the royal forest immortalized by Shakspeare in *Macbeth*.

Bir'ney, JAMES G., abolitionist, was born in Kentucky in 1792; died in 1857. In 1834 he emancipated his slaves and advocated the abolition of slavery; settling in Cincinnati he edited *The Philanthropist*, its office being mobbed several times and finally destroyed. In 1840 and 1844 he was candidate of the Liberty party for President, his candidacy (1844) depriving Henry Clay of the electoral votes of New York and Michigan, thereby electing Polk.

Birr. See *Parsonstown*.

Birs Nimrud, a famous mound in Babylonia, on the west side of the Euphrates, 6 miles S. W. of Hillah, generally identified as the remains of the Tower of Babel.

Birstal, a mining and manufacturing tn. of England, Yorkshire (W. Riding). Pop. 6766.

Birth, or **LABOUR**, in physiology, is the act by which a female of the class Mammalia brings one of her own species into the world. When the foetus has remained its due time in the womb, and is in a condition to carry on a separate existence, it is extruded from its place of confinement, in order to live the life which belongs to its species, independently of the mother. The period of gestation is very different in different animals, but in each particular species it is fixed with much precision. At the end of the thirty-ninth or the beginning of the fortieth week, the human child has reached its perfect state, and is capable of living separate from the mother; hence follows in course its separation from her, that is, the birth. Contractions of the womb gradually come on, which are called, from the painful sensations accompanying them, *labour-pains*. The contractions of the womb take place in the same order as the enlargement had previously done, the upper part of it first contracting, while the mouth of the womb enlarges and grows thin, and the vagina becomes loose and distensible. By this means the foetus, as the space within the womb is gradually narrowed, descends with a turning motion towards the opening, and some time after the head of the child appears and the rest of the body soon follows. An *artificial* birth is that which is accomplished by the help of art, with instruments or the hands of the attendant. *Pre-mature* birth is one which happens some weeks before the usual time, namely, after the seventh and before the end of the ninth month. *Late* birth is a birth after the usual period of forty weeks. Although this is considered the usual time for legitimate births, the practice of the English law courts is to allow a longer time when the opinions of the faculty, or the peculiar circumstances of the case, are in favour of a protracted gestation. In Scotland a child born after the tenth month is accounted illegitimate. Abortion and miscarriage take place when a foetus is brought forth so immature that it cannot live. They happen from the beginning of pregnancy to the seventh month, but most frequently in the third month.

Birth Mark. See *Navus*.

Birth'right, any right or privilege to which a person is entitled by birth, such as

an estate descendible by law to an heir, or civil liberty under a free constitution. See *Primogeniture*.

Birth'root, a name of *Trillium erectum* and other American plants of the same genus, having roots said to be astringent, tonic, and antiseptic.

Births, **REGISTRATION OF**. See *Registration*.

Birth'wort (*Aristolochia clematitis*), a European shrub so called from the supposed services of its root when used medically in parturition.

Bisaccia (bē-säch'ā), an Italian town, prov. of Avellino (Principato Ultra), 30 m. E.N.E. of Avellino in the Apennines. Pop. 6189.

Bisacquino (bis-ak-kwē'nō), a town of Sicily, prov. Palermo. Pop. 9588.

Bisalnag'ar, town of India, in Baroda, Bombay Presidency; manufactures of cotton; transit trade. Pop. 19,602.

Bisalpur', town of India, N.W. Provinces, 24 m. east of Bareilly. Pop. 8903.

Bis'cay (Spanish *Vizcaya*), a province of Spain near its north-east corner, one of the three Basque provinces (the other two being Alava and Guipuzcoa), area 850 sq. miles. The surface is generally mountainous; the most important mineral is iron, which is extensively worked; capital Bilbao. Pop. 235,659.

Biscay, **BAY OF**, that part of the Atlantic which lies between the projecting coasts of France and Spain, extending from Ushant to Cape Finisterre, celebrated for its dangerous navigation.

Bisceglie (bē-shel'yā), a seaport of Italy, province of Bari, on the w. shore of the Adriatic, surrounded by walls, and in general badly built. The neighbourhood produces good wine and excellent currants. Pop. 21,765.

Bischof (bish'of), **KARL GUSTAV**, German chemist and geologist; born at Nürnberg 1792, died at Bonn 1870. He was appointed professor of chemistry at Bonn in 1822. He published in London 1841, *Researches on the Internal Heat of the Globe* (in English); but his chief work is the *Lehrbuch der Chemischen und Physikalischen Geologie*, 1847-54.

Bischoff (bish'of), **THEODOR LUDWIG WILHELM**, German anatomist and physiologist, born in Hanover 1807; died at Munich 1882. He became professor of comparative and pathological anatomy at Bonn in 1836; of anatomy at Giessen in 1844; and from 1855 to 1878 he occupied a chair at Munich.

He was the author of several treatises, and gained distinction by his researches in embryology.

Bischweiler (bish'vī-lēr), a town of Germany, Alsace-Lorraine, 12 miles N. of Strasbourg, on the Moder, with flourishing manufactures of cloth. Pop. 6827.

Biscuit (bis'kêt; Fr. 'twice-baked'), a kind of hard, dry bread which is not liable to spoil when kept. Biscuits are either fermented or unfermented, the kinds in ordinary use being generally fermented, while the unfermented biscuit is much used at sea, and hence called sea-biscuit. More than a hundred different sorts of biscuit are manufactured, and owing to the immense demand manual labour has long since been superseded in the larger works by machinery. In making sea-biscuit the flour is mixed with water, converted into dough by a revolving shaft armed with knives, kneaded with rollers, cut, stamped, conveyed on a framework drawn by chains through an oven open at both ends, and thence passed to a drying room—all without being touched by hand. Two thousand lbs. weight of biscuits can thus be turned out of a single oven in a day of ten hours. In many fancy biscuits the process is of course more elaborate, but even in these machinery plays an important part. Sea-biscuit should continue sound for eighteen months or two years; its nutritive properties are to those of bread as eighteen to twenty-four. *Meat biscuits* are made of flour mixed with the soluble elements of meat.

Biscuit, in pottery, a term applied to porcelain and other earthenware after the first firing and before glazing. At this stage it is porous and used for wine-coolers, &c.

Bise (bēz), a keen northerly wind prevalent in the north of the Mediterranean.

Biseglie. See *Bisceglie*.

Bisharin (bi-shā-rēn'), a race inhabiting Nubia, between the Nile and the Red Sea, somewhat resembling the Bedouins, and living by pasturage. They are Mohammedans by religion; in character they are said to be cruel and treacherous. Personal property does not exist among them, the family or the tribe having the ownership.

Bishnupur', town of India, Bankur district of Bengal, with manufactures of cottons and fine silk cloth and a brisk trade. Pop. 18,863.

Bishop, the highest of the three orders in the Christian ministry—bishops, priests, and

deacons—in such churches as recognize three grades. The name is derived from the Greek *episkopos*, meaning literally an overseer, through the A. Saxon *biscop*, *bisceop*. Originally in the Christian church, the name was used interchangeably with *presbyter* or *elder* for the overseer or pastor of a congregation; but at a comparatively early period a position of special authority was held by the pastors of the Christian communities belonging to certain places, and the name of bishop became limited to these by way of distinction. There is much that is doubtful or disputed in regard to the history of the episcopal office. Roman Catholics and many others hold that it is of divine ordination and existed already in apostolic times; and they maintain the doctrine of the apostolical succession, that is to say, the doctrine of the transmission of the ministerial authority in uninterrupted succession from Christ to the apostles, and through these from one bishop to another. Presbyterians deny that the office was of divine or apostolic origin, and hold that it was an upgrowth of subsequent times easily accounted for, certain of the presbyters or pastors acquiring precedence as bishops over others, just as the bishops of the chief cities (Jerusalem, Antioch, Alexandria, Constantinople, Rome) obtained precedence among the bishops and received the title of metropolitan bishops; while the Bishop of Rome came to be regarded as the head of the church and the true successor of Peter. Already in the fifth century the popes had begun to send to the newly-elected metropolitan bishops (now called archbishops) the pallium, a kind of official mantle, as a token of their sanction of the choice. Two centuries later it became the custom to consecrate bishops by investing them with the ring and crosier, the former as a token of marriage with the church, the latter as a symbol of the pastoral office. This investiture, as giving validity to the election of the bishops, became the source of long-continued contests between the popes and the temporal sovereigns in the middle ages. At present in the R. Catholic Church the bishop is usually elected by the presbyters of the diocese, subject to the approbation of the pope and of the secular power. When the monarch is Roman Catholic a bishopric may be in the royal gift, subject to papal approval. The bishop comes next in rank to the cardinal. His special insignia are the mitre and crosier or pastoral staff, a gold ring, the pallium, dalmatica,

&c. He guards the purity of doctrine in his diocese, appoints professors in the clerical colleges, licenses books on religious subjects, ordains and appoints the clergy, consecrates churches, takes charge of the management of funds for ecclesiastical or pious purposes, &c. The bishops of the Greek Church have similar functions but on the whole less authority. They are always selected from the monastic orders.

In the Church of England bishops are nominated by the sovereign, who, upon request of the dean and chapter for leave to elect a bishop, sends a *congé d'élire*, or license to elect, with a letter missive, nominating the person whom he would have chosen. The election, by the chapter, must be made within twelve days, or the sovereign has a right to appoint whom he pleases. A bishop, as well as an archbishop, has his consistory court to hear ecclesiastical causes, and makes visits to the clergy, &c. He consecrates churches, ordains, admits, and institutes priests; confirms, suspends, excommunicates, grants licenses for marriage, &c. He has his archdeacon, dean, and chapter, chancellor, and vicar-general to assist him. In all the bishops of England now number thirty-three (several new bishoprics having been recently established), including the two metropolitans; and of these twenty-four sit in the House of Lords—the archbishops and the bishops of London, Durham, and Winchester by perpetual right, the others in order of seniority. In the Protestant Episcopal Church of Ireland there are twelve bishops, including the metropolitans of Armagh and Clogher and of Dublin and Kildare. In the Scottish Episcopal Church there are seven bishops. There are also about eighty British colonial and missionary bishops belonging to the Anglican Church. Of Roman Catholic bishops there are about 150 in the British dominions. In the U. States the Protestant Episcopal Church has over sixty bishops, the R. Catholic Church over seventy. In the States there are also the bishops of the Methodist Episcopal Church, thirteen in number.

Bishops in partibus infidelium (in parts occupied by the infidels), in the Roman Catholic Church, are bishops consecrated under the fiction that they are bishops in succession to those who were the actual bishops in places where Christianity has become extinct or almost so through the spread of Mohammedanism, as in Syria, Asia Minor, and the northern coast of Africa. Such titles

are given to missionary bishops in countries imperfectly Christianized, and were formerly given to the Roman Catholic bishops in Britain, the bishop of the northern district of Scotland, for instance, up to 1878 having the title of Bishop of Nicopolis.

Suffragan bishops are bishops consecrated to assist other bishops in overtaking the duties of their dioceses, though any bishop is a suffragan in relation to his archbishop.

Bishop, a beverage made by pouring hot or cold red wine upon the pulp and peel of oranges, and spicing and sugaring to taste. If white wine is employed it is known as *Cardinal*; if Tokay, it is termed *Pope*.

Bishop, SIR HENRY ROWLEY, musical composer, born in London in 1780, and trained under Bianchi, composer to the London Opera House. From 1809, when his first opera, the *Circassian Bride*, was produced at Drury Lane, until his masque *The Fortunate Isles*, written to celebrate Queen Victoria's marriage, he composed about a hundred works for the stage—among others the music of *Guy Mannering*, *The Slave*, *The Miller and his Men*, *Maid Marian*, *The Virgin of the Sun*, *Aladdin*, *Hamlet*, versions of operas by Rossini, Meyerbeer and others, *Waverley*, *Manfred*, &c. From 1810 to 1824 he acted as musical composer and director to Covent Garden Theatre. He also arranged several volumes of the *National Melodies*, and completed the arrangement of the music for *Moore's Irish Melodies*, commenced by Stevenson. Shortly after the accession of Queen Victoria he was knighted. He was elected Reid professor of music in Edinburgh University in 1841, and in 1848 professor of music in the University of Oxford. He died in 1855.

Bishop-Auckland, a town, England, county Durham (giving name to a parl. div. of the co.); with cotton-factories and engineering works; and important coal-mines in the neighbourhood. The palace of the Bishop of Durham is here (whence the name). Pop. 1891, 10,527.

Bishop Barnaby, the may-bug or lady-bird.

Bishop's Staff. See *Crosier*.

Bishop-Stortford, a town of England, county Hertford, on the river Stort; trade chiefly in grain and malt. Pop. 6704.

Bishop-Wearmouth. See *Sunderland*.

Bishop-weed (*Egopodium Podagraria*), an umbelliferous plant of Europe, with thrice-ternate leaves and creeping roots or

underground stems, a great pest in gardens from its vigorous growth and the difficulty of getting rid of it: called also *Gout-wort*, *Herb Gerard*, &c.

Bisignano (bē-sē-nyä'-nō), a town of S. Italy, province of Cosenza, the seat of a bishop and defended by a citadel. The place was thrown in ruins by an earthquake in Dec. 1887.

Bis'kara, or **BISKRA**, a town, Algeria, the chief military post of the Sahara, with an important caravanserai. Pop. 8000.

Bismarck, capital of North Dakota. Pop. in 1890, 2260.

Bismarck Archipelago, the name given by the Germans to New Britain, New Ireland, and other islands adjoining their portion of New Guinea.

Bismarck-Schönhausen (bis'märk-sheun'-hou-zèn), OTTO EDUARD LEOPOLD, PRINCE; born of a noble family of the 'Mark' (Brandenburg), at Schönhausen, April 1, 1815;



Prince Bismarck.

studied at Göttingen, Berlin, and Greifswald; entered the army and became lieutenant in the Landwehr. After a brief interval devoted to his estates and to the office of inspector of dikes, he became in 1846 a member of the provincial diet of Saxony, and in 1847 of the Prussian diet. In 1851 he was appointed representative of Prussia in the diet of the German Federation at Frankfort, where with brief interruptions he remained till 1859, exhibiting the highest ability in his efforts to checkmate Austria and place Prussia at the head of the German

states. From 1859-62 he was ambassador at St. Petersburg, and in the latter year, after an embassy to Paris of five months' duration, was appointed first minister of the Prussian crown. The Lower House persistently refusing to pass the bill for the reorganization of the army, Bismarck at once dissolved it (Oct. 1862), closing it for four successive sessions until the work of reorganization was complete. When popular feeling had reached its most strained point the Schleswig-Holstein question acted as a diversion, and Bismarck—by the skilful manner in which he added the duchies to Prussian territory, checkmated Austria, and excluded her from the new German confederation, in which Prussia held the first place—became the most popular man in Germany. As chancellor and president of the Federal Council he secured the neutralization of Luxembourg in place of its cession by Holland to France; and though in 1868 he withdrew for a few months into private life, he resumed office before the close of the year. A struggle between Germany and France appearing to be sooner or later inevitable, Bismarck, having made full preparations, brought matters to a head on the question of the Hohenzollern candidature for the Spanish throne. Having carried the war to a successful issue, he became chancellor and prince of the new German empire. Subsequently, in 1872, he alienated the Roman Catholic party by promoting adverse legal measures and expelling the Jesuits. He then resigned his presidency for a year, though still continuing to advise the emperor. Towards the close of 1873 he returned to power, retaining his position until in March 1890 he disagreed with the emperor and tendered his resignation. In 1878 he presided at the Berlin Congress, in 1880 at the Berlin Conference, and in 1884 at the Congo or Colonial Conference. He retired from the Chancellorship in 1889. Died July 30, 1898.

Bis'muth, a metal of a yellowish or reddish-white colour, and a lamellar texture. Chemical sym. Bi; atomic weight, 213; specific gravity, 9.8. It is somewhat harder than lead and not malleable, when cold being so brittle as to break easily under the hammer, so as to be reducible to powder. Its internal face or fracture exhibits large shining plates variously disposed. It fuses at 476° Fahr., and expands considerably as it hardens. It is often found in a native state, crystallized in rhombs or octahedrons,

or in the form of dendrites, or thin laminae investing the ores of other metals, particularly cobalt. Bismuth is used in the composition of pewter, in the fabrication of printers' types, and in various other metallic mixtures. Eight parts of bismuth, 5 of lead, and 3 of tin, constitute the fusible metal sometimes called Newton's, from the discoverer, which melts at 202° Fahr., and may be fused over a candle in a piece of stiff paper without burning the paper. It forms the basis of a sympathetic ink; and a derivative from it is used in medicine. A special feature of interest is its diamagnetic property. The subnitrate or basic nitrate of bismuth is used as a paint and as a cosmetic, and is known as *Pearl White* or *Pearl Powder*.

Bi'son, the name applied to two species of ox. One of these, the European bison or aurochs (*Bos bison* or *Bison europæus*), is now nearly extinct, being found only in the



American Bison (*Bison americanus*).

forests of Lithuania and the Caucasus. The other, or American bison, improperly termed buffalo (*Bison americanus*), is found only in the region lying north and south between the Great Slave Lake and the Yellowstone river, and in parts of Kansas and Texas, and is rapidly becoming extinct in the wild state, though formerly to be met with in immense herds. The two species closely resemble each other, the American bison, however, being for the most part smaller, and with shorter and weaker hind-quarters. The bison is remarkable for the great hump or projection over its fore-shoulders, at which point the adult male is almost six feet in height; and for the long, shaggy, rust-coloured hair over the head, neck, and fore-part of the body. In summer, from the shoulders backwards, the surface is

covered with a very short fine hair, smooth and soft as velvet. The tail is short and tufted at the end. The American bison used to be much hunted for sport as well as for its flesh and skin. Its flesh is rather coarser grained than that of the domestic ox, but was considered by hunters and travellers as superior in tenderness and flavour. The hump is highly celebrated for its richness and delicacy. Their skins, especially that of the cow, dressed in the Indian fashion, with the hair on, make admirable defences against the cold, and are known as *buffalo robes*; the wool has been manufactured into hats, and a coarse cloth. The American bison has been found to breed readily with the common ox, the issue being fertile among themselves.

Bisque (bisk), a kind of unglazed white porcelain used for statuettes and ornaments.

Bissa'gos, a group of about thirty islands near the w. coast of Africa, opposite the mouth of the Rio Grande, between lat. 10° and 12° N. The largest, Orango, is about 25 miles in length, and most of them are inhabited by a rude negro race, with whom some trade is carried on. Most of the islands are under native chiefs nominally vassals of Portugal. At Bolama, or Bulama, once a British settlement, but abandoned as unhealthy in 1793, there is a Portuguese town, a thriving and pleasant place, the seat of government for the Portuguese possessions in this quarter.

Bissen, WILHEM, a Danish sculptor, born in 1798, died in 1868. He studied at Rome under Thorwaldsen, who in his will appointed Bissen to complete his unfinished works and take charge of his museum. Bissen's own works include a classic frieze of several hundred feet for the palace-hall at Copenhagen, an Atalanta hunting, Cupid sharpening his arrows, &c.

Bissex'tile. See *Leap-year*.

Bis'tort (*Polygōnum Bistorta*), a perennial plant of the buckwheat family (Polygonaceæ), found in Britain, and from its astringent properties (it contains much tannin) sometimes used medicinally. It bears a raceme of flesh-coloured flowers, and may be met with in gardens. It is also called adder's-wort and snake-weed, from being a supposed remedy against snake bites.

Bistoury (bis'tu-ri), a surgical implement for making incisions, of various forms.

Bistre, or BISTER, a warm brown pigment, a burned oil extracted from the soot

of wood, especially beech. It furnishes a fine transparent wash, but is chiefly employed in the same fashion as sepia and indian ink for monochrome sketches.

Bis'tritz, a town of Austria-Hungary, in Transylvania. Pop. 8063.

Bisulnuggur, Bisulpur. See *Bisal*.

Bit, the part of a bridle which goes into the mouth of a horse, and to which the reins are attached.—Also one of the movable boring tools used by means of the carpenter's brace. There is a great variety of forms, to which special names are given.

Bithoor, BITHUR (bit-hör'), or **BITTOOR**, a town, India, N.W. Provinces, 12 miles N.W. of Cawnpore, on the Ganges, long the abode of a line of Mahratta chiefs, the last of whom died without issue in 1851. His adopted son, Nana Sahib, who claimed the succession, was the instigator of the massacre at Cawnpore. Pop. 6685.

Bithyn'ia, an ancient territory in the N.W. of Asia Minor, on the Black Sea and Sea of Marmora, at one time an independent kingdom, latterly a Roman province. The cities of Chalcedon, Heraclea, Nicomedia, Nicæa, and Prusa were in Bithynia. In the eleventh century it was conquered by the Seljuks, and in 1298 a new kingdom was founded there by the Ottoman Turks, of which, prior to the capture of Constantinople, Prusa (Broussa) was the capital.

Bitlis. See *Betlis*.

Biton'to, a town, Italy, province of Bari, the seat of a bishop, with a handsome cathedral. The environs produce excellent wine. Pop. 22,726.

Bitsch (bich), a German town in the north of Alsace-Lorraine, in a pass of the Vosges, and having a strong citadel on a hill. Pop. 3000.

Bitter-almond, the bitter variety of *Amygdalus communis*, or common almond.

Bitter-apple, a name applied to the Bitter-gourd.

Bitter-ash, a tree, *Simarūba amāra*, a native of the West Indies, the bark of which is used as a tonic. Others of the same genus have also the same name, *S. excelsa* of Jamaica having wood almost as bitter as quassia, and being called Jamaica quassia.

Bit'terfeld (-felt), town in Prussian Saxony, on the Mulde, with manufactures of cloth, pottery, &c. Pop. 7596.

Bitter-gourd, a plant, *Citrullus Colocynthis*, called also *Colocynth* (which see).

Bitter-king, the *Soulamēa amāra*, a tree

of the quassia order peculiar to the Moluccas and Fiji Islands, the root and bark of which, bruised and macerated, are used in the East as an emetic and tonic.

Bitter Lakes, salt lakes on the line of the Suez Canal.

Bit'tern, the name of several grallatorial birds, family Ardeidæ or herons, genus *Botaurus*. There are two British species, the common bittern (*Botaurus stellāris*), and the little bittern (*B. minūtus*), a native of the south, and only a summer visitor to Britain. Both, however, are becoming rare from the reclamation of the marshy grounds that form their favourite haunt. The common bittern is about 28 inches in length, about 44 in extent of wing; general colour, dull yellowish-brown, with spots and bars of black or dark brown; feathers on the breast long and loose; tail short; bill about 4 inches long. It is remarkable for its curious booming or bellowing cry, from which come the provincial names of *miredrum* and *butterbump*, &c. The eggs (greenish-brown) are four or five in number. The little bittern is not more than 15 inches in length. The American bittern (*B. lentiginōsus*) has some resemblance to the common European bittern, but is smaller.

Bit'tern, the syrupy residue from evaporated sea-water after the common salt has been taken out of it. It is used in the preparation of Epsom salt (sulphate of magnesia), of Glauber's salt (sulphate of soda), and contains also chloride of magnesium, iodine, and bromine.

Bitter-nut, a tree of N. America, of the walnut order, the *Carya amāra*, or swamp-hickory, which produces small and somewhat egg-shaped fruits, with a thin fleshy rind; the kernel is bitter and uneatable.

Bitter-root, *Lewisia rediviva*, a plant of Canada and part of the U. States, order Mesembryaceæ, so called from its root being bitter though edible, and indeed esteemed as an article of food by whites as well as Indians. From the root, which is long, fleshy, and tapering, grow clusters of succulent green leaves, with a fleshy stalk bearing a solitary rose-coloured flower rising in the centre, and remaining open only in sunshine. Flower and leaves together, the plant appears above ground for only about six weeks.—Californian bitter-root (*Echinocystis fabacæa*) and Natal bitter-root (*Gerrardanthus macrorrhiza*) both belong to the gourd family.

Bitters, a liquor (frequently spirituous), in which bitter herbs or roots have been steeped. Gentian, quassia, angelica, bogbean, chamomile, hops, centaury, &c., are all used for preparations of this kind. The well-known Angostura bitters have aromatic as well as bitter properties. Bitters are employed as stomachics, anthelmintics, &c.

Bitter-salt, Epsom salt, sulphate of magnesia.

Bitter-spar, rhomb-spar, the crystallized form of dolomite or magnesian limestone.

Bitter-sweet, the woody nightshade, *Solanum Dulcamara* (see *Nightshade*).

Bitter Vetch, a name applied to two kinds of leguminous plants: (a) *Ervum ervilia*, a lentil cultivated for fodder; and (b) all the species of *Orbust*, e.g. the common bitter vetch of Britain, *O. tuberosus*, a perennial herbaceous plant with racemes of purple flowers and sweet edible tubers.

Bitter-wood, the timber of *Xylopi* *glabra* and other species of *Xylopi*, order Anonaceæ, all noted for the extreme bitterness of the wood. The name is also given to other bitter trees, as the bitter-ash.

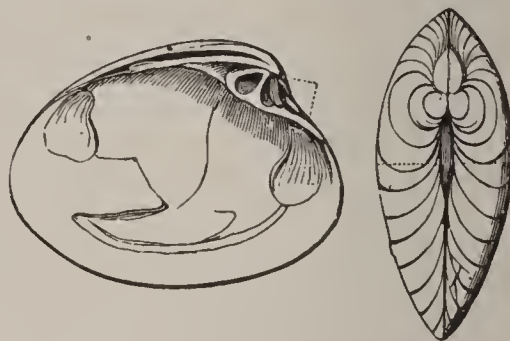
Bitter-wort, yellow gentian (*Gentiāna lutea*).

Bitu'men, a mineral substance of a resinous nature, composed principally of hydrogen and carbon, and appearing in a variety of forms which pass into each other and are known by different names, from *naphtha*, the most fluid, to *petroleum* and *mineral tar*, which are less so, thence to *maltha* or *mineral pitch*, which is more or less cohesive, and lastly to *asphaltum* and *elastic bitumen* (or *elaterite*), which are solid. It burns like pitch, with much smoke and flame. It consists of 84 to 88 of carbon and 12 to 16 of hydrogen, and is found in the earth, occurring principally in the secondary, tertiary, and alluvial formations. It is a very widely spread mineral, and is now largely employed in various ways. As the binding substance in mastics and cements it is used for making roofs, arches, walls, cellar-floors, &c., water-tight, for street and other pavements, and in some of its forms for fuel and for illuminating purposes. The bricks of which the walls of Babylon were built are said to have been cemented with bitumen, which gave them unusual solidity.

Bituminous Shale, or **SCHIST**, an argillaceous shale impregnated with bitumen and very common in the coal-measures. It is largely worked for the production of paraffin, &c.

Bit'zius, ALBERT, a popular Swiss author, better known by his pseudonym of Jere-mias Gotthelf, born 1797, died 1854. His chief works were his *Scenes and Traditions of the Swiss*, 1842-46; *Grandmother Katy*, 1848; *Uli the Farm-servant*, and *Uli the Farmer*, 1850; *Stories and Pictures of Popular Life in Switzerland*, 1851.

Bi'valves, molluscous animals having a shell consisting of two halves or valves



Bivalve Shell.

that open by an elastic hinge and are closed by muscles; as the oyster, mussel, cockle, &c.

Bivouac (biv'-u-ak), the encampment of soldiers in the open air without tents, each remaining dressed and with his weapons at hand. It was the regular practice of the French revolutionary armies, but is only desirable where great celerity of movement is required.

Bixa. See *Arnotto*.

Bizer'ta, or **BENZERT**, a seaport of Tunis, the most northern town of Africa, formerly one of the best ports in Tunis, though now only accessible to small vessels, at the entrance of a narrow channel (5 miles long, 1 broad) communicating with the Lake of Bizerta, a fine, deep, salt-water lagoon teeming with fish, inland from and connected with which is a fresh-water lake. The country around is beautiful and fertile. Pop., chiefly Arab, about 5000.

Bjelbog (byel'bog), in Slavonic mythology the pale or white god, as opposed to Tchernibog, the black god, or god of darkness.

Björneborg (byeur'ne-borg), a seaport of Finland in the Gulf of Bothnia. Pop. 8718.

Björnson, BJÖRNSTJERNE (byeurn'styer-ne byeurn'son), Norwegian novelist, poet, and dramatist, born 1832. He entered the University of Christiania in 1852, and he speedily became known as a contributor of articles and stories to newspapers and as a dramatic critic. From 1857 to 1859 he was manager of the Bergen theatre, producing

during that time his novel *Arne*, and his tragedy of *Halte Hulda*. He was at Christiania part-editor of the *Aftenblad* in 1860, then lived several years abroad, and in 1866 became editor of the *Norsk Folkeblad*. In 1869–72 he was co-director of a Copenhagen periodical, and much of his later life has been passed abroad. The democratic tendencies to be found in his novels have found a practical outcome in the active part taken by him in political questions bearing upon the Norwegian peasantry and popular representation. Among his tales and novels, a number of which may be had in English, are: *Synnøve Solbakken*; *Arne*; *The Fishermayden*; *A Happy Boy*; *Railways and Churchyards*. Among his dramatic pieces are: *The Newly-married Couple*; *Mary Stuart in Scotland*; *A Bankruptcy*, &c. He has also written poems and songs.

Björnstjerna (*byeurn'sher-nà*), MAGNUS FREDERICK FERDINAND, COUNT, Swedish statesman and author, born 1779, died 1847. Having entered the Swedish army and risen to be colonel, he went with the Swedish troops to Germany in 1813 and took part in the battles of Grossbeeren, Dennewitz, the passage of the Elbe, the storming of Dessau, and the battle of Leipzig. He also received the surrender of Lübeck and of Maestricht. After the capitulation of Paris he fought in Holstein and in Norway, at length concluding with Prince Christian Frederick at Moss the convention uniting Norway and Sweden. In 1826 he was made a count, and in 1828 plenipotentiary to Great Britain, where he continued till 1846. He published works on British Rule in the East Indies, on the Theogony, Philosophy, and Cosmogony of the Hindus, &c.

Black, the negation of all colour, the opposite of white. There are several black pigments, such as *ivory-black*, made from burned ivory or bones; *lamp-black*, from the smoke of resinous substance; *Spanish-black*, or *cork-black*, from burned cork, &c.

Black, JOHN, author and editor, was the son of a Berwickshire shepherd, and born in 1783. After being employed in a lawyer's office, first in Duns and then in Edinburgh, he removed in 1810 to London, where he became engaged as parliamentary reporter for the *Morning Chronicle*, ultimately rising to be its editor. He retired in 1843 and died in 1855.

Black, JEREMIAH S., born at The Glades,

Pa., 1810, died at York, Pa., 1883; a celebrated lawyer; in 1860 was Secretary of State in Mr. Buchanan's Cabinet.

Black, JOSEPH, a distinguished chemist, born at Bordeaux, of Scottish parents, in 1728; entered Glasgow University and studied chemistry under Dr. Cullen. In 1754 he was made Doctor of Medicine at Edinburgh, his thesis being on the nature of the causticity of lime and the alkalies, which he demonstrated to be due to the absence of the carbonic acid present in limestone, &c. In 1756 he extended and republished this thesis, and was appointed professor of medicine and lecturer on chemistry at Glasgow in succession to Dr. Cullen, whom he succeeded also in the Edinburgh chair in 1766. The discovery of carbonic acid is of interest not only as having preceded that of the other gases made by Priestley, Cavendish, and others, but as having preceded in its method the explanation given by Lavoisier of the part played by oxygen in combustion. His fame, however, chiefly rests on his theory of 'latent heat,' 1757 to 1763. He died in 1799.

Black, WILLIAM, novelist, born in Glasgow in 1841, first studied art, but eventually became connected with the Glasgow press. In 1864 he went to London, and in the following year joined the staff of the *Morning Star*, for which he was special correspondent during the Franco-Austrian war of 1866. His first novel, *Love or Marriage*, 1867, was only moderately successful, but his *In Silk Attire*, *Kilmeny*, the *Monarch of Mincing Lane*, and especially *A Daughter of Heth* (1871), gained him an increasingly wide circle of readers. For four or five years he was assistant-editor of the *Daily News*, but his success in fiction led him to cease connection with journalism. His later works are *The Strange Adventures of a Phaeton* (1872), *A Princess of Thule* (1873), *The Maid of Killeena*, &c. (1874), *Three Feathers* (1875), *Madcap Violet* (1876), *Green Pastures and Piccadilly* (1877), *Macleod of Dare* (1878), *White Wings* (1880), *Sunrise* (1881), *The Beautiful Wretch* (1882), *Shandon Bells* (1883), *Yolande*, *Judith Shakespeare*, *The Strange Adventures of a House-boat*, &c.

Black Acts, the acts of the Scottish parliaments of the Jameses I.–V., of Queen Mary, and of James VI.; so called from their being printed in black-letter.

In English law, the act passed under George I. with reference to the 'Blacks,' a

body of armed deer-stealers, &c., who infested Epping Forest.

Black'adder, JOHN, a Scottish Covenanter, born in 1615. Having been obliged to demit his charge at Troqueer in favour of an Episcopal incumbent, he went with his wife and family to Caitloch, in the parish of Glencairn, and became one of the most popular of the itinerant preachers, successfully eluding the numerous warrants issued against him. In 1674 he was outlawed and a large reward offered for his body. In 1678 he went to Holland, and again in 1680, but on his return to Edinburgh in 1681 he was apprehended and imprisoned upon the Bass, where he died in 1685.

Black Art. See *Magic*.

Black-band, a valuable kind of clay iron-stone occurring in beds in the coal-measures, and containing 10 or 15 or even 30 per cent of coaly matter. Most of the Scotch iron is obtained from it.

Black-beer, a kind of beer of a black colour and syrupy consistence made at Dantzic.

Black-beetle, a popular name for the cockroach. See also *Blapsidæ*.

Black'berry, a popular name of the bramble-berry or the plant itself.

Black'bird (*Turdus merula*), called also the *merle*, a well-known species of thrush, common in Britain and throughout Europe. It is larger than the common thrush, its length being about 11 inches. The colour of the male is a uniform deep black, the bill being an orange-yellow; the female is of a brown colour, with blackish-brown bill. The nest is usually in a thick bush, and is built of grass, roots, twigs, &c., strengthened with clay. The eggs, generally four or five in number, are of a greenish-blue, spotted with various shades of brown. The song is rich, mellow, and flute-like, but of no great variety or compass. Its food is insects, worms, snails, fruits, &c. The blackbirds or crow-blackbirds of America are quite different from the European blackbird, and are more nearly allied to the starlings and crows. See *Crow-blackbird*. The red-winged blackbird (*Agelaius phœnicæus*), belonging to the starling family, is a familiar American bird that congregates in great flocks.

Black-boy, a name for the grass-trees (*Xanthorrhœa*) of Australia yielding a gum or resin called black-boy resin or akaroid resin.

Black'burn, manufacturing town and

parliamentary borough of England, Lancashire, 21 miles N.N.W. from Manchester. It is pleasantly situated in a sheltered valley, and has rapidly improved since 1850, the town-hall, exchange, and other buildings being of recent erection. It has a free grammar-school, founded by Queen Elizabeth in 1557, a free school for girls, founded in 1765, and many other public schools; and a free library, a public park of 50 acres; &c. Blackburn is one of the chief seats of the cotton manufacture, there being upwards of 140 mills as well as works for making cotton machinery and steam-engines. The cottons made in the town and vicinity have an annual value of about £5,000,000. Returns two members to Parliament. Pop. 1891, 120,064.

Black-cap (*Sylvia atricapilla*), a European passerine bird of the warbler family, 6 inches long, upper part of the head black, upper parts of the body dark gray with a greenish tinge, under parts more or less silvery white. The female has its hood of a dull rust colour. The black-cap is met with in England from April to September. Its nest is built near the ground; the eggs, from five to six, are reddish-brown, mottled with a deeper colour. It ranks next to the nightingale for sweetness of song. The American black-cap is a species of tit-mouse (*Parus atricapillus*), so called from the colouring of the head.

Black Chalk, a soft variety of argillaceous slate, containing 10 to 15 per cent of carbon, and used for drawing.

Black Cock, the heath-cock, the male of the black-grouse. See *Grouse*.

Black Country, a popular name for the district of coal-mines and iron-works in South Staffordshire, and extending into Warwick and Worcestershire.

Black Death. See *Plague*.

Black Draught, sulphate of magnesia and infusion of senna, with aromatics to make it palatable.

Blackfeet Indians, a tribe of American Indians, partly inhabiting the U. States, partly Canada, from the Yellowstone to Hudson's Bay.

Blackfish (*Tautoga americana*), a fish caught on the American coast, especially in the vicinity of Long Island, whence large supplies are obtained for the New York market. Its back and sides are of a bluish or crow black; the under parts, especially in the males, are white. It is plump in appearance, and much esteemed for the

table, varying in size from 2 to 12 lbs. Another fish, the *Centrolōphus morio*, found in the Mediterranean and on the coasts of Western Europe, is also called blackfish. It belongs to the mackerel family. In Scotland the term is applied to foul or newly-spawned fish. In America two species of small whale of the genus *Globiocephālus* also get this name.

Black Fly, the name of two flies (*Simulium molestum* and *S. nocivum*) whose bite is very troublesome to man and beast in the Northern United States and Canada.

Black Forest (German, *Schwarzwald*), a chain of European mountains in Baden and Württemberg, running almost parallel with the Rhine for about 85 miles. The Danube, Neckar, Kinzig, and other streams rise in the Black Forest, which is rather a chain of elevated plains than of isolated peaks; highest summit, Feldberg, 4900 feet. The skeleton of the chain is granite, its higher points covered with sandstone. The principal mineral is iron, and there are numerous mineral springs. The forests are extensive, chiefly of pines and similar species, and yield much timber. The manufacture of wooden clocks, toys, &c., is the most important industry, employing about 40,000 persons. The inhabitants of the forest are quaint and simple in their habits, and the whole district preserves its old legendary associations.

Black Friars, friars of the Dominican order: so called from their habit.

Black Gum (*Nyssa multiflōra*, order Cornaceæ), an American tree, yielding a close-grained, useful wood; fruit a drupe of blue-black colour, whence it seems to get its name of 'black': it has no gum about it. It is called also pepperidge, and has been introduced into Europe as an ornamental tree.

Blackheath, a village and heath, England, Kent, about 6 miles S.E. of London Bridge. The *heath* contains about 70 acres within its present limits, and is much resorted to by pleasure parties. It has been the scene of many remarkable events, such as the insurrectionary gatherings of Wat Tyler and Jack Cade and the exploits of various highwaymen.

Black Hills, a hilly region of the United States in South Dakota and N. E. Wyoming, rising to the height of 6700 ft., rich in timber, but especially in gold, as well as other minerals.

Black Hole of Calcutta, a small chamber,

20 feet square, in the old fort of Calcutta, in which, after their capture by Surajah Dowlah, the whole garrison of 146 men were confined during the night of June 21st, 1756. Only twenty-three survived. The spot is now marked by a monument.

Blackie, JOHN STUART, Scottish writer, long professor of Greek in the University of Edinburgh; born at Glasgow in 1809; educated at Aberdeen, Edinburgh, Göttingen, and Berlin. He passed as advocate at the Edinburgh bar in 1834, in which year appeared his metrical translation of Faust. In 1841 he was appointed to the chair of Latin literature in Marischal College, Aberdeen—a post held by him until his appointment to the Greek chair at Edinburgh in 1852, from which he retired in 1882. Both in writing and upon the platform his name has been associated with various educational, social, and political movements. Among his more important works are his Metrical Translation of Æschylus (1850); Lays and Legends of Ancient Greece, &c. (1857); Discourse on Beauty (1860); Lyrical Poems (1860); Metrical Version of the Iliad (1866); Musa Burschicosa (1869); Four Phases of Morals (1871); Self-culture (1873); The Wise Men of Greece (1877); Natural History of Atheism (1877); Lay Sermons (1881); and Altavona, Fact and Fiction from My Life in the Highlands (1882). He died in 1895.

Blacking, for boots and shoes, &c., usually contains for its principal ingredients oil, vinegar, ivory or bone black, sugar or molasses, strong sulphuric acid, and sometimes caoutchouc and gum-arabic. It is used either liquid or in the form of paste, the only difference being that in making the paste a portion of the vinegar is withheld.

Black-jack. See *Blende*.

Black Lead. See *Graphite*.

Black-letter, the name commonly given to the Gothic characters which began to supersede the Roman characters in the writings of Western Europe towards the close of the twelfth century. The first types were in black-letter, but these were gradually modified in Italy until they took the later Roman shape introduced into most European states during the sixteenth century.

Black List, a list of bankrupts or other parties whose names are officially known as failing to meet pecuniary engagements.

Black'lock, THOMAS, a Scottish poet, born at Annan in 1721. At the age of six months he lost his sight by small-pox; and

as he grew up, his father, who was a brick-layer, and other friends, read to him the English classics. At the age of nineteen he lost his father, and was supported by Dr. Stephenson, a physician in Edinburgh, who sent him to school and to the university. In 1746 he brought out a volume of poems, and soon gained a wide circle of friends, amongst whom were David Hume and Joseph Spence, who wrote an account of his life, prefixed to the third edition of his poems in 1756. After passing through the usual theological course he was licensed in 1759; he married in 1762; and was soon after appointed minister of Kirkcudbright. Being opposed by his parishioners, he resigned his living, and retired to Edinburgh, where he received students of the university as boarders, and assisted them in their studies. In 1766 he was created D. D. Died 1791.

Black-mail, a certain rate of money, corn, cattle, or the like, anciently paid, in the north of England and in Scotland, to certain men who were allied to robbers, to be protected by them from pillage. It was carried to such an extent as to become the subject of legislation. Black-mail was levied in the districts bordering the Highlands of Scotland till the middle of the eighteenth century. In the United States, money extorted from persons under threat of exposure in print for an alleged offence; hush-money.

Black'more, SIR RICHARD, physician and writer in verse and prose, the son of an attorney in the county of Wilts; entered the University of Oxford in 1668; became a schoolmaster; then travelled on the Continent, took the degree of M.D. at Padua, and was admitted Fellow of the Royal College of Physicians in 1687. In 1695 he published his heroic poem *Prince Arthur*, and two years later was knighted and appointed physician to William III. A ponderously worthy man, though very middling poet, he became the common butt of the day, no amount of ridicule, however, being

sufficient to restrain his desire for literary distinction. His *Paraphrases on Job* (1700) was followed by *Eliza*, an Epic in Ten Books (1705) and by the *Nature of Man* (1711). His poem the *Creation* (1712) received the praise of Addison and Johnson; but his *Redemption*, in six books (1722), and his *Alfred*, in twelve (1723), reverted to the unrelieved monotony of his earlier style. He left several prose works on theology and medicine, and died in 1729.

Blackmore, RICHARD DODDRIDGE, novelist, born at Longworth, Berkshire, 1825; educated at Tiverton School and Exeter College, Oxford, where he graduated in 1847. In 1852 he was called to the bar at the Middle Temple, and afterwards practised as a conveyancer. His greatest success was *Lorna Doone*, a Romance of Exmoor (1869), one of the best of modern romances. Other novels by him are: *Clara Vaughan* (1864); *Cradock Nowell*, a Tale of the New Forest (1866); *The Maid of Sker* (1872); *Alice Lorraine*, a Tale of the South Downs (1875); *Cripps the Carrier* (1876); *Erema* (1877); *Mary Anerley* (1880); *Christowell* (1882); and *Sir Thomas Upmore* (1884). He has also published a translation of Virgil's *Georgics* (1862 and 1871).

Black Mountains, the group which contains the highest summits of the Appalachian system, Clingman's Peak being 6701 ft., Guyot's Peak 6661. See *Appalachian Mountains*.

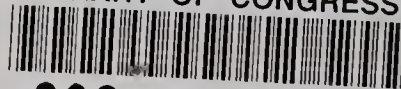
Blackpool, a much-frequented watering-place of England, on the coast of Lancashire, between the estuaries of the Ribble and Wyre. It consists of lofty houses ranging along the shore for about 3 miles, with an excellent promenade and carriage-drive; has libraries and news-rooms, two handsome promenade-piers, a large aquarium, fine winter-gardens, &c. It gives name to a parl. div. of the county. Pop. 1891, 23,846.

Black Prince, the son of Edward III. See *Edward*.





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